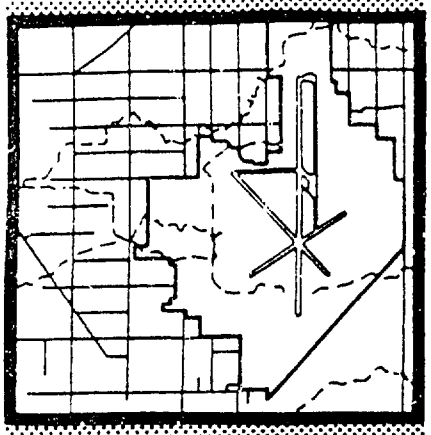
AD-A210 641



INSTALLATION RESTORATION PROGRAM
STAGE 3
McCLELLAN AIR FORCE BASE

PREPARED BY:
Radian Corporation
10395 Old Placerville Road
Sacramento, California 95827

JUNE 1989

DATA SUMMARY
JANUARY - MARCH 1989

FINAL

DTIC
ELECTE
JUL 25 1989
S D
B

PREPARED FOR:
HEADQUARTERS AFLC/DEV
WRIGHT-PATTERSON AFB, OHIO 45433

United States Air Force
Occupational and Environmental Health Laboratory (USAFOEHL)
Technical Services Division (TS)
Brooks Air Force Base, Texas 78235-5501

RADIAN CORPORATION

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

RADIAN
CORPORATION

10395 Old Placerville Road
Sacramento, CA 95827
(916)362-5332

227-005-03
DCN: 88-227-005-03-03

AD-A210 641

McCLELLAN AFB, CALIFORNIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM
JANUARY THROUGH MARCH 1989
DATA SUMMARY

FINAL COPY

HEADQUARTERS AFLC/DEV
WRIGHT-PATTERSON AFB, OHIO 45433

JUNE 1989

Prepared by:

Radian Corporation
10395 Old Placerville Road
Sacramento, CA 95827

AF CONTRACT NO.: F33615-87-D-4023, DELIVERY ORDER NO. 0003
AF PROJECT NO.: PRJY871502
RADIAN CONTRACT NO.: 227-005-03

AFOEHL Technical Services Division (TS)
Mr. Dale Dietzel
Technical Program Manager

United States Air Force
Occupational and Environmental Health Laboratory (AFOEHL)
Technical Services Division (TS)
Brooks Air Force Base, Texas 78235-5501

RADIAN
CORPORATION

NOTICE

This data summary has been prepared for the United States Air Force for the purpose of aiding in the implementation of a final remedial action plan under the Air Force Installation Restoration Program (IRP). As the data summary relates to actual or possible releases of potentially hazardous substances, its release prior to an Air Force final decision on remedial action is in the public interest. The limited objectives of this data summary and the ongoing nature of the IRP, along with the evolving knowledge of site conditions and chemical effects on the environment and health, must be considered when evaluating this data summary, since subsequent facts may become known which may make this data summary premature or inaccurate. Acceptance of this data summary in performance of the contract under which it was prepared does not mean that the U.S. Air Force or the Department of Defense adopts the conclusions, recommendations, or other views expressed herein, which are those of the contractor only and do not necessarily reflect the official position of either department.

Copies of this report may be purchased from:

National Technical Information Services
5285 Port Royal Road
Springfield, VA 22161

AD-A210 641

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS SACRAMENTO AIR LOGISTICS CENTER (AFLC)
McCLELLAN AIR FORCE BASE, CALIFORNIA 95652-5990

13 JUL 1989

REPLY TO ATTN OF: EM

SUBJECT: McClellan AFB Data Summary, Jan - Mar 89, Final Report

TO: SEE DISTRIBUTION LIST

1. Attached is the final copy of the Data Summary for the period of Jan - Mar 89. Groundwater Samples were collected from a total of 88 wells during this period. These wells included 78 monitoring wells, 6 Area D extraction wells, and 4 Area C extraction wells.

2. If there any questions regarding this report, contact Mr Jerry Robbins, SM-ALC/EMR, (916) 643-1250.

Paul G. Brunner

PAUL G. BRUNNER
Deputy Director
Environmental Management

1 Atch
Jun 89 Data Summary Report

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION: UNCLASSIFIED	1b. RESTRICTIVE MARKINGS: N/A
2a. SECURITY CLASSIFICATION AUTHORITY: N/A	3. DISTRIBUTION / AVAILABILITY OF REPORT: UNLIMITED
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE: N/A	
4. PERFORMING ORGANIZATION REPORT NUMBER(S): N/A	5. MONITORING ORGANIZATION REPORT NUMBER(S): N/A
6a. NAME OF PERFORMING ORGANIZATION: Radian Corporation; 6b. OFFICE SYMBOL (If applicable): N/A	7a. NAME OF MONITORING ORGANIZATION: AFOEHL/TSS
6c. ADDRESS (City, State, and ZIP Code): 10395 Old Placerville Road, Sacramento, CA 95827	7b. ADDRESS (City, State, and ZIP Code): Brooks AFB, Texas 78235-5501
8a. NAME OF FUNDING / SPONSORING ORGANIZATION: AFOEHL/TSS; 8b. OFFICE SYMBOL (If applicable): N/A	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER: F33615-87-D-4023
8c. ADDRESS (City, State, and ZIP Code): Brooks AFB, Texas 78235-5501	10. SOURCE OF FUNDING NUMBERS: PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification): McClellan Air Force Base, California. Remedial Investigation/ Feasibility Study, Sampling and Analysis Program, January through March, 1989. Data Summary, Final Copy (Unclassified)

12. PERSONAL AUTHOR(S): Radian Corporation

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final Copy	FROM 01/01/89 TO 06/16/89	89/06/19	140

16. SUPPLEMENTARY NOTATION

17. COSATI CODES		
FIELD	GROUP	SUB-GROUP

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This Data Summary presents the results of groundwater sampling activities conducted on and in the vicinity of McClellan Air Force Base from the sampling period of January through March, 1989. Concentrations of purgeable halocarbons and aromatic compounds detected in 36 wells (26 monitoring wells and 10 extraction wells) exceeded state and/or federal drinking water standards. These wells are located on base in Areas A, B, C, D and adjacent on-base areas and off-base in the Northwest and Southwest areas. There was no detected increase in the areal extent of contaminated groundwater, nor was there any increase in the depth that contaminated groundwater was detected. The Area D extraction system is effectively operating to change hydraulic gradients, so groundwater in Area D flows toward the extraction wells. Contaminant concentrations have decreased in Area D deep zone monitoring wells. Samples from three middle zone monitoring wells located in Area D also show decreases in contaminant concentration during this sampling period. Decreasing contaminant concentrations have stabilized in shallow zone monitoring wells located off-base, west of Area D.

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT: ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION: UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL: Mr. Dale Dietzel	22b. TELEPHONE (Include Area Code): 1-800-821-4528; 22c. OFFICE SYMBOL: AFOEHL/TSS

DD FORM 1473, 84 MAR — 83 APR edition may be used until exhausted. All other editions are obsolete.

RADIAN
CORPORATION

PREFACE

Radian Corporation is the contractor for the Installation Restoration Program (IRP), Stage 3 Remedial Investigation/Feasibility Study (RI/FS) at McClellan Air Force Base (AFB), California. The work is being performed for the AF Occupational and Environmental Health Laboratory (AFOEHL) under AF Contract No. F33615-87-D-4023.

This Data Summary summarizes and presents the results of the Sampling and Analysis Program, January through March 1989. The data presented include analytical results for groundwater samples collected from monitoring and extraction wells, and groundwater level data measured from wells on and in the vicinity of McClellan AFB. These data are used to evaluate current interim remedial measures and to identify the need for future remedial measures.

Key Radian project personnel were:

Nelson Lund, P.E. - Contract Program Manager
Jack D. Gouge' - Delivery Order Manager
Morey Lewis - Project Manager
Marie T. McCrink - Project Director

Radian acknowledges the cooperation of the McClellan AFB Office of Environmental Management. In particular, Radian acknowledges the assistance of Mr. Mario Ierardi, Mr. Bud Hoda, and Mr. Gerald Robbins.

The work presented herein was accomplished between 01 January 1989 and 18 June 1989. Mr. Dale Dietzel, Technical Services Division, AF Occupational and Environmental Health Laboratory (AFOEHL/TS) was the technical monitor.

Approved _____
Nelson Lund
Contract Program Manager

DTIC COPY INSPECTED

Accession For	
NTIS GRA&I	☑
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

RADIAN CORPORATION

TABLE OF CONTENTS

RADIAN CORPORATION

LIST OF TABLES

RADIAN CORPORATION

LIST OF TABLES (Continued)

RADIAN CORPORATION

LIST OF TABLES (Continued)

APPENDICES TABLES

RADIAN CORPORATION

LIST OF FIGURES

RADIAN
CORPORATION

EXECUTIVE SUMMARY

In support of ongoing Remedial Investigation/Feasibility Study (RI/FS) activities at McClellan Air Force Base (AFB), California, Radian personnel measure groundwater levels, collect, and analyze groundwater samples from on- and off-base wells on a quarterly basis. These activities determine the direction of groundwater flow, identify the presence of groundwater contaminants, and identify and evaluate any trends in groundwater flow or concentrations of contaminants that may be developing, with respect to time. This Data Summary presents the sampling and analytical results collected during the sampling period of January through March 1989. Evaluations of trends in groundwater flow and concentrations of contaminants for all regularly monitored wells within the study area will be presented in the 1990 Annual Technical Report.

Groundwater levels were measured over a three-day period prior to collecting groundwater samples. Water levels were measured on 03, 04, and 05 January 1989. Water-level data are used to generate potentiometric surface maps to identify groundwater flow patterns beneath McClellan AFB (Plates 2, through 6). Groundwater generally flows to the south-southwest in the northeastern portion of the Sacramento area. In the vicinity of McClellan AFB, deviations from this general direction of flow can be identified by the configuration of the contours on the potentiometric surface maps produced from the water-level data. These local deviations from the regional flow pattern are due to operation of extraction wells in Area D, on-base water supply wells, and off-base water supply wells.

As a result of continuous pumping by the six Area D extraction wells, a cone of depression continues to be observed on potentiometric surface maps for the shallow and middle monitoring zones in the northwest corner of the base. The effectiveness of the Area D extraction system was evaluated based on hydraulic gradient criteria and long-term changes in Trichloroethene (TCE) concentrations for selected monitoring wells. The shallow zone monitoring wells located outside the extraction well field have shown a decrease followed by recent stabilizing of TCE concentrations over the past several

sampling events; three middle zone monitoring wells within the influence of the extraction wells have shown decreasing TCE concentrations; and TCE has not been detected in the two deep zone monitoring wells during the most recent sampling period.

The effect of the Area C extraction system on groundwater levels cannot be seen on potentiometric maps, except for a slight effect on the configuration of the contours for the deep "A" monitoring zone map. Additional monitoring wells are needed to evaluate the effect of the extraction system on hydraulic heads in Area C. The Air Force has identified locations for piezometers to monitor water levels in Area C that can be used to evaluate the effectiveness of the extraction system. This work is scheduled for 1989 and 1990 as part of the Preliminary Groundwater Operable Unit Remedial Investigation (PGOURI) (Radian, March 1989).

Groundwater flow directions in the east-central portion of the base are still not well defined. The local flow of groundwater in this area of the base is influenced by active base production well BW-10. However, there is limited water-level data, and the influence of this well cannot be seen on the potentiometric surface maps. To remedy this, several additional monitoring wells will be installed during 1989 in this and other areas of the base as part of the PGOURI (Radian, March 1989).

A cone of depression beneath the southern portion of the base (Area B and the Southwest Area) can be recognized on the monthly potentiometric surface maps. The cone of depression evident in the shallow and middle monitoring zone potentiometric surface maps apparently results from pumping of base production well BW-18, as well as off-base water supply wells. The cone of depression probably extends into the deep monitoring zone; however, due to the absence of deep zone monitoring wells in this area, the areal and vertical extent of the cone of depression cannot be defined. Pumping of other production wells to the south of Area B by the City of Sacramento may also be influencing the water levels in the southwest area.

Based on the existing monitoring well network, groundwater flow across the base can be summarized as follows. Groundwater flow is from the

north to the south in the northern end of the base. In Area D, groundwater converges toward the extraction system. In Area C, groundwater flow is toward the south. Near the extraction wells, flow is toward the wells; however, the zone of influence of the extraction wells cannot be defined with the existing monitoring wells. In the east, groundwater flow appears to be from the north/northeast to the south/southwest. The local effects of on-base water supply wells cannot be defined with the existing monitoring wells. In Area A, groundwater appears to be flowing to the southwest. In Area B, groundwater flow is toward BW-18.

Groundwater samples were collected and analyzed from 78 monitoring wells, 6 Area D extraction wells and 4 Area C extraction wells during January 1989. In addition, samples were collected and analyzed from the 10 extraction wells in February and March 1989. The analytical results for these samples were evaluated based on established Quality Assurance/ Quality Control (QA/QC) procedures. This evaluation ensures that all analytical results that did not meet the applicable acceptance criteria are not reported without qualification. Data acceptability was determined by evaluating field and laboratory blanks, field duplicates, matrix spikes, matrix spike duplicates, analytical spikes, and surrogate spikes.

The objectives for accuracy, precision, and completeness were met, and overall analytical and sampling performance was acceptable. Based on review of the analytical data, no significant problems in overall quality control were identified. Although there were a few occurrences of laboratory and field contamination, this contamination did not affect the overall quantitation of analytes of interest in the groundwater. Therefore, no overall adverse qualification or rejection of the data is necessary. Any data outside stated objectives were qualified. The completeness objective of having more than 90 percent usable data has been met because more than 99 percent of the data have been validated and are unqualified.

Following the evaluation of the quality control (QC) procedures, analytical results were compared to state and federal drinking water standards. Thirty-six wells (10 extraction wells and 26 monitoring wells) con-

tained contaminants at concentrations exceeding California Department of Health Services (DHS) action levels and/or United States Environmental Protection Agency (U.S. EPA) Primary Maximum Contaminant Levels (PMCLs) (Table S-1). The wells exceeding drinking water standards are located on base in Areas A, B, C, and D and Adjacent On-Base Areas and off base in the Northwest and Southwest Areas.

New Findings

Analytical results for this period of groundwater sampling and analyses activities are similar to results obtained during the previous sampling period (October through December, 1988). During this sampling period, samples from 36 wells contained concentrations of analytes that exceeded state or federal drinking water standards. During the previous sampling period, 36 wells also contained compounds at concentrations exceeding drinking water standards.

Some notables changes in contaminant concentrations between the last sampling period and this sampling period were observed. In MW-41S, a shallow zone monitoring well located in Area B, TCE concentrations have increased from 2,900 to 3,300 ug/L (ppb). In January 1988, the TCE concentration in this well was 140 ug/L. In MW-55, a middle zone monitoring well located in Area D, significant decreases for five Method 8010 analytes have occurred. The five analytes have been decreasing in this well over the past several sampling events and are now below drinking water standards. For MW-41S and MW-55, these changes do represent statistically verifiable trends and were discussed in detail in the working copy of the Annual Technical Report (Radian, April 1989). Three shallow monitoring zone wells (MW-10, MW-12, and MW-15), also in Area D, have shown significant decreases in contaminant concentrations. However, these changes do not represent statistically verifiable trends. These wells will be re-evaluated for long-term statistical trends in the 1990 Annual Technical Report after another four quarters of sampling have occurred.

RADIAN CORPORATION

TABLE S-1. WELLS CONTAINING ANALYTES AT CONCENTRATIONS EXCEEDING STATE AND FEDERAL DRINKING WATER STANDARDS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-73	01/05/89	D	8240	Vinyl chloride		SAC	2100	2	1
				1,1-Dichloroethene		SAC	9900	6	7
				1,1-Dichloroethane		SAC	800	20	NE
				Total 1,2-Dichloroethene		SAC	1100	16	NE
				1,1,1-Trichloroethane		SAC	810	200	200
				Trichloroethene		SAC	1300	5	5
EW-73	02/01/89	D	8010	Vinyl chloride		SAC	1500P	2	1
				Methylene chloride		SAC	1300P	40	NE
				1,1-Dichloroethene		SAC	7000P	6	7
				1,1-Dichloroethane		SAC	800P	20	NE
				Total 1,2-Dichloroethene		SAC	730P	16	NE
				1,1,1-Trichloroethane		SAC	790P	200	200
				Trichloroethene		SAC	1100P	5	5
EW-73	03/01/89	D	8010	Vinyl chloride		SAC	1000P	2	1
				1,1-Dichloroethene		SAC	5400P	6	7
				1,1-Dichloroethane		SAC	930P	20	NE
				Total 1,2-Dichloroethene		SAC	740P	16	NE
				1,1,1-Trichloroethane		SAC	930P	200	200
				Trichloroethene		SAC	690P	5	5
			8020	Toluene		SAC	220C	100	NE
EW-83	01/04/89	D	8010	1,1-Dichloroethene		SAC	390P	6	7
				Trichloroethene		SAC	41P	5	5
EW-83	02/02/89	D	8010	Methylene chloride		SAC	150C	40	NE
				1,1-Dichloroethene		SAC	650C	6	7
				Tetrachloroethene		SAC	7.8C	4	NE
EW-83	03/01/89	D	8010	1,1-Dichloroethene		SAC	410P	6	7
				Trichloroethene		SAC	42P	5	5
EW-84	01/10/89	D	8010	Vinyl chloride	FDA	SAC	410P	2	1
				Methylene chloride	FDA	SAC	40P	40	NE
				1,1-Dichloroethene	FDA	SAC	1200P	6	7
				1,1-Dichloroethane	FDA	SAC	240P	20	NE

All units are ug/l.
EW = Extraction well
NE = Not established
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE S-1. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-84	01/10/89	D	8010	Total 1,2-Dichloroethene	FDA	SAC	230P	16	NE
				1,2-Dichloroethane	FDA	SAC	65P	1	5
				Trichloroethene	FDA	SAC	980P	5	5
				Vinyl chloride	FDB	SAC	620P	2	1
				1,1-Dichloroethene	FDB	SAC	2000P	6	7
				1,1-Dichloroethane	FDB	SAC	370P	20	NE
				Total 1,2-Dichloroethene	FDB	SAC	210P	16	NE
				1,2-Dichloroethane	FDB	SAC	56P	1	5
				1,1,1-Trichloroethane	FDB	SAC	210P	200	200
				Trichloroethene	FDB	SAC	1600P	5	5
EW-84	02/02/89	D	8010	Vinyl chloride		SAC	440C	2	1
				Methylene chloride		SAC	56C	40	NE
				1,1-Dichloroethene		SAC	1300C	6	7
				1,1-Dichloroethane		SAC	207C	20	NE
				Total 1,2-Dichloroethene		SAC	220C	16	NE
				1,2-Dichloroethane		SAC	120C	1	5
				Trichloroethene		SAC	1200C	5	5
EW-84	03/01/89	D	8010	Vinyl chloride		SAC	350C	2	1
				1,1-Dichloroethene		SAC	860C	6	7
				1,1-Dichloroethane		SAC	180C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,2-Dichloroethane		SAC	110C	1	5
				Trichloroethene		SAC	720C	5	5
EW-85	01/04/89	D	8010	1,1-Dichloroethene		SAC	600C	6	7
				1,2-Dichloroethane		SAC	13C	1	5
				Trichloroethene		SAC	400C	5	5
EW-85	02/02/89	D	8010	Methylene chloride		SAC	92P	40	NE
				1,1-Dichloroethene		SAC	880P	6	7
				Trichloroethene		SAC	660P	5	5
EW-85	03/01/89	D	8010	1,1-Dichloroethene		SAC	550P	6	7
				1,1-Dichloroethane		SAC	26P	20	NE
				Trichloroethene		SAC	330P	5	5
EW-86	01/04/89	D	8010	1,1-Dichloroethene		SAC	100P	6	7
				Trichloroethene		SAC	42P	5	5

All units are ug/l.
EW = Extraction well
NE = Not established
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
FDB = Second part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE S-1. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-86	02/02/89	D	8010	1,1-Dichloroethene		SAC	74P	6	7
				Trichloroethene		SAC	40P	5	5
EW-86	03/01/89	D	8010	1,1-Dichloroethene		SAC	56P	6	7
				Trichloroethene		SAC	25P	5	5
EW-87	01/05/89	D	8010	1,1-Dichloroethene		SAC	100P	6	7
				Trichloroethene		SAC	39P	5	5
EW-87	02/02/89	D	8010	1,1-Dichloroethene		SAC	140C	6	7
				Trichloroethene		SAC	58C	5	5
EW-87	03/01/89	D	8010	1,1-Dichloroethene		SAC	100C	6	7
				Trichloroethene		SAC	36C	5	5
EW-137	01/12/89	C	8010	Trichloroethene		SAC	490C	5	5
EW-137	02/02/89	C	8010	Trichloroethene		SAC	480C	5	5
EW-137	03/01/89	C	8010	Trichloroethene		SAC	310P	5	5
EW-140	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	28C	16	NE
				Trichloroethene		SAC	140C	5	5
EW-140	02/02/89	C	8010	Total 1,2-Dichloroethene		SAC	30C	16	NE
				Trichloroethene		SAC	160C	5	5
EW-140	03/01/89	C	8010	Total 1,2-Dichloroethene		SAC	25C	16	NE
				Trichloroethene		SAC	93C	5	5
EW-141	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE
				Trichloroethene		SAC	230C	5	5
EW-141	02/02/89	C	8010	Total 1,2-Dichloroethene		SAC	20C	16	NE
				Trichloroethene		SAC	210C	5	5
EW-141	03/01/89	C	8010	Trichloroethene		SAC	120P	5	5
EW-144	01/18/89	C	8010	Trichloroethene		SAC	310C	5	5
			8240	Trichloroethene		SAC	360	5	5

All units are ug/l.
EW = Extraction well
NE = Not established
SAC = Radian Analytical Services, Sacramento

C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE S-1. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-144	02/02/89	C	8010	Trichloroethene		SAC	340C	5	5
EW-144	03/01/89	C	8010	Trichloroethene		SAC	240C	5	5
MW-10	01/25/89	D	8010	Vinyl chloride		SAC	73C	2	1
				1,1-Dichloroethene		SAC	840C	6	7
				1,1-Dichloroethane		SAC	110C	20	NE
				Total 1,2-Dichloroethene		SAC	130C	16	NE
				1,2-Dichloroethane		SAC	250C	1	5
				Trichloroethene		SAC	1300C	5	5
				1,2-Dichlorobenzene		SAC	140C	130	NE
			8020	1,2-Dichlorobenzene		SAC	140P	130	NE
MW-11	01/31/89	D	8010	1,1-Dichloroethene		SAC	19000C	6	7
				1,1-Dichloroethane		SAC	270C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,1,1-Trichloroethane		SAC	5600C	200	200
				Trichloroethene		SAC	2900C	5	5
MW-12	01/25/89	D	8010	1,1-Dichloroethene		SAC	2600P	6	7
				1,1,1-Trichloroethane		SAC	360P	200	200
				Trichloroethene		SAC	590P	5	5
				Tetrachloroethene		SAC	38P	4	NE
MW-14	01/26/89	D	8010	1,1-Dichloroethene		SAC	4600C	6	7
				1,2-Dichloroethane		SAC	34C	1	5
				1,1,1-Trichloroethane		SAC	2300C	200	200
				Trichloroethene		SAC	4100C	5	5
MW-15	01/25/89	D	8010	1,1-Dichloroethene		SAC	580C	6	7
				Trichloroethene		SAC	340C	5	5
MW-26D	01/23/89	A	8010	Trichloroethene		SAC	22C	5	5
MW-33S	01/11/89	C	8010	Methylene chloride		SAC	1100U	40	NE
				Total 1,2-Dichloroethene		SAC	580P	16	NE
				1,2-Dichloroethane		SAC	200P	1	5
				Trichloroethene		SAC	17000P	5	5
MW-41S	01/16/89	B	8010	Trichloroethene		SAC	3300C	5	5

All units are ug/l.
EW = Extraction well
MW = Monitoring well
NE = Not established
SAC = Radian Analytical Services, Sacramento

C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed
U = Unconfirmed, second column not requested

RADIAN CORPORATION

TABLE S-1. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
MW-41S	01/16/89	B	8010	Tetrachloroethene		SAC	240C	4	NE
MW-44S	01/18/89	C	6010	Chromium		SAC	55	NE	50
MW-61	01/20/89	C	8010	Trichloroethene		SAC	12C	5	5
MW-63	01/19/89	B	8010	Total 1,2-Dichloroethene	FDA	SAC	29C	16	NE
				Trichloroethene	FDA	SAC	55C	5	5
				Total 1,2-Dichloroethene	FDB	SAC	31C	16	NE
				Trichloroethene	FDB	SAC	59C	5	5
MW-72	01/06/89	D	8010	1,1-Dichloroethene		SAC	370P	6	7
				1,1-Dichloroethane		SAC	49P	20	NE
				Total 1,2-Dichloroethene		SAC	34P	16	NE
				1,2-Dichloroethane		SAC	130P	1	5
				Trichloroethene		SAC	550P	5	5
MW-75	01/25/89	C	8010	Trichloroethene		SAC	12C	5	5
MW-89	01/16/89	D	8010	1,1-Dichloroethene		SAC	6.2C	6	7
MW-120	01/10/89	B	8010	Trichloroethene	FDB	SAC	5.1C	5	5
MW-128	01/12/89	C	8010	Methylene chloride		SAC	800C	40	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				Trichloroethene		SAC	17000C	5	5
MW-129	01/12/89	C	8010	Trichloroethene	FDA	SAC	170C	5	5
				Trichloroethene	FDB	SAC	140C	5	5
MW-131	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	19P	16	NE
				Trichloroethene		SAC	90P	5	5
MW-132	01/16/89	B	8010	Total 1,2-Dichloroethene		SAC	25C	16	NE
				Trichloroethene		SAC	82C	5	5
MW-135	01/16/89	C	8010	Trichloroethene		SAC	25C	5	5
MW-136	01/26/89	C	8010	Trichloroethene		SAC	230C	5	5
MW-139	01/16/89	C	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE

All units are ug/l.
MW = Monitoring well
NE = Not established
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
FDB = Second part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE S-1. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
MW-139	01/16/89	C	8010	1,2-Dichloroethane		SAC	1.1C	1	5
				Trichloroethene		SAC	95C	5	5
			6010	Cadmium		SAC	33	NE	10
MW-1004	01/17/89	NW	8010	1,1-Dichloroethene		SAC	7.0P	6	7
MW-1005	01/13/89	NW	8010	1,1-Dichloroethene		SAC	20C	6	7
				Trichloroethene		SAC	5.2C	5	5
MW-1021	01/19/89	SW	8010	Trichloroethene		SAC	15C	5	5
MW-1022	01/19/89	SW	8010	Trichloroethene	FDA	SAC	9.1C	5	5
				Trichloroethene	FDB	SAC	10C	5	5

All units are ug/l.
MW = Monitoring well
NW = Northwest area
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
FDB = Second part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed
SW = Southwest area

Recommendations

Recommendations are made based on field and analytical data acquired through this sampling period.

- Recently developed and redeveloped wells should be sampled for three sampling rounds to provide water quality data. The need for continued sampling of these wells can then be evaluated. These include the new wells in the Area B Operable Unit, and monitoring wells MW-7, MW-25D, MW-26D, MW-49, MW-64, MW-65, and MW-66;

- Provide access to a recently fenced-off monitoring well cluster, MW-111/112/113, located in the West Area. These wells would provide useful water level data, and an increasing contaminant trend observed in MW-111 should be monitored again; and

- Maintenance work should be done on three Area D extraction wells (EW-73, EW-83, EW-84) with blocked sounding tubes. Unknown obstructions in these sounding tubes are preventing measurement of water levels.

1.0 GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

The purposes of the field sampling activities are to obtain water level measurements and to obtain representative groundwater samples for chemical analyses. Water-level measurements were taken prior to sampling on 03, 04 and 05 January 1989, to provide data for evaluation of the groundwater flow regime beneath McClellan Air Force Base (AFB) and adjacent areas. Following water-level measurements, groundwater samples were collected from a total of 88 wells during the period of 05 January to 31 January 1989. Locations of wells on and off base are shown on Plate 1. The wells sampled included 78 monitoring wells, 6 Area D extraction wells and 4 Area C extraction wells. Of the 78 monitoring wells sampled, 58 are located on base and 20 are located off base.

Beginning in January 1989, the sampling frequency for 42 monitoring wells was reduced from quarterly to annually. A reduction in sampling frequency was recommended by Radian based on the sampling history of the wells, location of the wells and estimated groundwater flow rates. The 42 wells now on an annual sampling schedule all have a consistent sampling history of no analytes detected or unchanging concentrations of analytes. In addition, these wells are not located within 1,000 feet of active water supply wells or near the two on-base extraction systems. Groundwater flow rates in areas away from actively pumped wells are estimated to be less than 23 feet/month. Based on these considerations, annual sampling of these wells will yield adequate data on groundwater quality. The specific wells now scheduled for annual sampling are listed in Appendix A-1.

Three monitoring wells scheduled to be sampled during January could not be sampled for the following reasons:

- MW-53--purge and bladder pumps detached and blocking well;
- MW-74--access for sampling vehicle blocked by muddy conditions; and

- MW-76--access for sampling vehicle blocked by muddy conditions.

All groundwater samples collected were analyzed using United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods (U.S. EPA Third Edition, 1986). All samples collected were analyzed using a shortened list (Appendix A-2) of Method 8010 compounds. Selected samples were analyzed using Method 8020, Method 6010, Method 7196 and Method 8240.

A list of wells sampled and analyses performed during January through March 1989 is presented in Table 1-1. Locations of wells are shown on Plate 1.

A summary of the analytical results from the sampling period of January through March 1989 are presented in Tables 1-2 and 1-3. Contaminant levels in 36 wells exceeded California Department of Health Services (DHS) Action Levels and/or U.S. EPA Primary Maximum Contaminant Levels (Table 1-6). These wells (26 monitoring wells and 10 extraction wells) are located on base in Areas A, B, C, and D, except for 4 off-base monitoring wells located in the Northwest and Southwest Areas. During the previous sampling period, 36 wells also contained contaminants at concentrations above drinking water standards.

1.1 Results of Field Activities

Field activities include measuring water levels, monitoring three parameters during purging of the wells, and collecting water quality samples. The detailed procedures used to measure water levels and to collect water samples are described in the Quality Assurance Project Plan (QAPP) (Radian, April 1989). Briefly, after purging a minimum of three well volumes, measurement of the pH, temperature, and conductivity is used to verify that stagnant water in the well has been removed and fresh formation water will be sampled. When the pH, temperature, and conductivity have stabilized after purging and immediately prior to sample collection, the well is considered ready to be sampled.

RADIAN CORPORATION

TABLE 1-1. WELLS SAMPLED AND ANALYSES PERFORMED,
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM,
JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Well Number [a]	Date Sampled	Method 8010	8020	8240	6010	7196
EW-73	01/05/89			X		
EW-73	02/01/89	X	X			
EW-73	03/01/89	X	X			
EW-83	01/04/89	X				
EW-83	02/02/89	X				
EW-83	03/01/89	X				
EW-84	01/10/89	X	X			
EW-84	02/02/89	X				
EW-84	03/01/89	X				
EW-85	01/04/89	X				
EW-85	02/02/89	X				
EW-85	03/01/89	X				
EW-86	01/04/89	X				
EW-86	02/02/89	X				
EW-86	03/01/89	X				
EW-87	01/05/89	X				X
EW-87	02/02/89	X				
EW-87	03/01/89	X				
EW-137	01/12/89	X	X		X	X
EW-137	02/02/89	X	X			
EW-137	03/01/89	X	X			
EW-140	01/12/89	X	X		X	X
EW-140	02/02/89	X	X			
EW-140	03/01/89	X	X			
EW-141	01/12/89	X	X		X	X
EW-141	02/02/89	X	X			
EW-141	03/01/89	X	X			
EW-144	01/18/89	X	X	X	X	X
EW-144	02/02/89	X	X			
EW-144	03/01/89	X	X			
MW-10	01/25/89	X	X			
MW-11	01/31/89	X	X			
MW-12	01/25/89	X	X		X	X
MW-14	01/26/89	X	X			
MW-15	01/25/89	X	X			
MW-20D	01/23/89	X			X	X
MW-21D	01/23/89	X			X	X
MW-21S	01/24/89	X			X	X
MW-22D	01/12/89	X			X	X
MW-23D	01/09/89	X	X			
MW-24D	01/13/89	X				

[a] The letters 'S' and 'D' associated with the monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

EW = Extraction Well

MW = Monitoring Well

RADIAN CORPORATION

TABLE 1-1. (continued)

Well Number [a]	Date Sampled	Method 8010	8020	8240	6010	7196
MW-25D	01/24/89	X			X	X
MW-26D	01/23/89	X	X			
MW-28D	01/23/89	X			X	X
MW-33S	01/11/89	X	X		X	X
MW-41S	01/16/89	X	X		X	X
MW-44S	01/18/89	X			X	X
MW-51	01/06/89	X				
MW-52	01/18/89	X				
MW-54	01/17/89	X				
MW-55	01/06/89	X				
MW-57	01/09/89	X	X			
MW-58	01/09/89	X	X			
MW-59	01/05/89	X				
MW-60	01/13/89	X			X	
MW-61	01/20/89	X			X	
MW-62	01/11/89	X			X	
MW-63	01/19/89	X				
MW-64	01/24/89	X				
MW-70	01/05/89	X				
MW-71	01/30/89	X			X	X
MW-72	01/06/89	X				
MW-75	01/25/89	X	X		X	
MW-88	01/17/89	X				
MW-89	01/16/89	X	X			
MW-90	01/16/89	X			X	
MW-91	01/13/89	X	X		X	
MW-92	01/17/89	X				
MW-104	01/20/89	X				
MW-105	01/17/89	X			X	X
MW-114	01/20/89	X				
MW-115	01/16/89	X			X	X
MW-120	01/10/89	X			X	
MW-121	01/13/89	X			X	
MW-122	01/10/89	X				
MW-128	01/12/89	X	X		X	
MW-129	01/12/89	X			X	
MW-130	01/12/89	X			X	X
MW-131	01/12/89	X			X	
MW-132	01/16/89	X				
MW-133	01/19/89	X			X	X
MW-134	01/16/89	X			X	X
MW-135	01/16/89	X			X	X

[a] The letters 'S' and 'D' associated with the monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

EW = Extraction Well

MW = Monitoring Well

RADIAN CORPORATION

TABLE 1-1. (continued)

Well Number [a]	Date Sampled	Method 8010	8020	8240	6010	7196
MW-136	01/26/89	X			X	
MW-138	01/12/89	X			X	
MW-139	01/16/89	X			X	X
MW-142	01/18/89	X			X	X
MW-143	01/18/89	X			X	X
MW-1000	01/09/89	X				
MW-1001	01/17/89	X				
MW-1002	01/13/89	X				
MW-1003	01/17/89	X				
MW-1004	01/17/89	X			X	
MW-1005	01/13/89	X				
MW-1013	01/18/89	X			X	
MW-1014	01/24/89	X			X	
MW-1015	01/10/89	X				
MW-1016	01/11/89	X			X	
MW-1019	01/18/89	X			X	X
MW-1020	01/18/89	X			X	
MW-1021	01/19/89	X	X			
MW-1022	01/19/89	X				
MW-1023	01/11/89	X				
MW-1024	01/10/89	X				
MW-1025	01/10/89	X				
MW-1037	01/11/89	X				
MW-1038	01/11/89	X				
MW-1039	01/11/89	X				

[a] The letters 'S' and 'D' associated with the monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

EW = Extraction Well

MW = Monitoring Well

TABLE 1-2. SUMMARY OF RESULTS FOR U.S. EPA METHOD SW8010,
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM,
JANUARY THROUGH MARCH 1989, McCLELLAN AFB

ON-BASE MONITORING AND EXTRACTION WELLS

	Area A and Adjacent On-Base Areas	Area B and Adjacent On-Base Areas	Area C and Adjacent On-Base Areas	Area D and Adjacent On-Base Areas	Other On-Base Areas	Totals
Total Wells Sampled	3	8	28	27	1	67
Wells - Nothing Detected	0	4	7	6	0	17
Wells Containing Analytes Below DHS Action Levels and/or U.S. EPA PMCLs	2	0	8	8	1	19
Wells Containing Analytes Above DHS Action Levels and/or U.S. EPA PMCLs	MW-26D	MW-41S,MW-63,MW-120, MW-132	EW-137,EW-140,EW-141, EW-144,MW-33S,MW-61, MW-75,MW-128,MW-129, MW-131,MW-135,MW-136, MW-139	EW-73,EW-83,EW-84, EW-85,EW-86,EW-87, MW-10,MW-11,MW-12, MW-14,MW-15,MW-72, MW-89		31

TABLE 1-2. (continued)

OFF-BASE MONITORING WELLS

	Northeast Area	Northwest Area	West Area	Southwest Area	Southeast Area	Totals
Total Wells Sampled	0	6	0	9	6	21
Wells - Nothing Detected	0	2	0	5	6	13
Wells Containing Analytes Below DHS Action Levels and/or U.S. EPA PMCLs	0	2	0	2	0	4
Wells Containing Analytes Above DHS Action Levels and/or U.S. EPA PMCLs		MW-1004,MW-1005		MW-1021,MW-1022		4

TABLE 1-3. SUMMARY RESULTS FOR OTHER ANALYSES,
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM,
JANUARY THROUGH MARCH 1989, McCLELLAN AFB

ON- AND OFF-BASE MONITORING AND EXTRACTION WELLS

U.S. EPA Method	Volatile Aromatic Compounds 8020	Purgeable Organic Compounds 8240	Priority Pollutant Metals and Other Inorganic Compounds 6010	Chromium VI 7196
Total Wells Sampled	22	2	43	26
Wells - Nothing Detected	19	0	0	21
Wells Containing Analytes Below DHS Action Levels a Or Below U.S. EPA Primary MCLs b	1	0	41	5
Wells Containing Analytes Above DHS Action Levels a Or Above U.S. EPA Primary MCLs b	EW-73,MW-10	EW-73,EW-144	MW-44S,MW-139	

a Methods 8020, 8240

b Methods 6010, 7196

The results of field data collected during January through March 1989 are discussed in the following subsections.

1.1.1 Groundwater Levels

The results of water level measurements in January 1989 are presented in Table 1-4. These water-level data were used to generate potentiometric surface maps for three of the four monitoring zones currently used at McClellan AFB. The four current monitoring zones are the shallow monitoring zone (above -55 feet mean sea level [msl]), middle monitoring zone (between -55 and -100 feet msl), deep "A" monitoring zone (between -100 and 150 feet msl) and deep "B" monitoring zone (below -150 feet msl). A potentiometric map was not produced for the deep "B" monitoring zone because there are only four monitoring wells screened in this zone.

Based on the evaluation of the potentiometric surface maps for the three monitoring zones (Plates 2 - 6), there have not been significant changes in flow directions since the last sampling period. The effects of the Area C and Area D extraction systems on groundwater flow directions are discussed in Section 2.0.

1.1.2 Field Parameters

Results of pH, conductivity, and temperature measurements taken during the January through March sampling period are presented in Table 1-5.

1.2 Analytical Results

Samples collected from monitoring and extraction wells during this sampling period were analyzed using SW-846 methods 8010, 8020, 8240, 6010 and 7196. Samples from 36 wells contained contaminants at concentrations above DHS Action Levels and/or U.S. Primary Maximum Contaminant Levels, as shown in Table 1-6. Although this is the same number of wells containing concentrations above drinking water standards as the previous samping period, some of the wells are different as summarized below:

RADIAN CORPORATION

TABLE 1-4. MONTHLY GROUNDWATER-LEVEL DATA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Monitoring Well Number[a]	Area	Groundwater-Level Elevation (feet above mean sea level) Current Measurement 01/03/89 - 01/05/89	Previous Measurement 09/29/88 - 09/30/88
Shallow Zone Monitoring Wells:			
MW-10	D	-34.17	-34.79
MW-11	D	-33.57	-33.85
MW-12	D	-33.84	-34.16
MW-14	D	-34.05	-35.32
MW-15	D	-33.71	-34.78
MW-160	OT	-29.42	-32.07
MW-18S	OT	-31.05	-30.88
MW-21S	C	-33.28	-32.50
MW-31S	OT	NM[b]	-31.85
MW-33S	C	-35.04	-34.67
MW-36S	C	-31.91	-31.80
MW-41S	B	-38.58	-38.89
MW-44S	C	-32.57	-32.08
MW-49S	OT	-29.87	-33.80
MW-60	C	-33.00	-32.44
MW-61	C	-35.59	-35.01
MW-62	C	-32.81	-32.68
MW-67	A	-32.10	-33.78
MW-68	A	-35.35	-36.53
MW-88	D	-32.62	-33.08
MW-89	D	-33.47	-34.05
MW-90	D	-33.45	-34.54
MW-91	D	-33.02	-33.93
MW-92	D	-33.19	-33.58
MW-101	OT	-29.32	-35.44
MW-102	OT	-27.62	-28.03
MW-106	OT	-30.17	-30.41
MW-107	C	-31.14	-31.28
MW-110	C	-30.09	-30.10
MW-111	C	NM[c]	-31.72
MW-114	C	-33.66	-33.29
MW-116	OT	-35.82	-35.21
MW-120	B	-36.25	-36.78
MW-128	C	-35.36	-35.08
MW-131	C	-36.12	-35.59
MW-139	C	-37.03	-36.81
MW-1002	NW	-32.37	-32.76
MW-1004	NW	-31.87	-32.57

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b Well is dry.

c No access to well.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

RADIAN CORPORATION

Table 1-4. (Continued)

Monitoring Well Number [a]	Area	Groundwater-Level Elevation (feet above mean sea level) Current Measurement 01/03/89 - 01/05/89	Previous Measurement 09/29/88 - 09/30/88
Shallow Zone Monitoring Wells:			
MW-1005	NW	-31.80	-32.96
MW-1009	NW	-30.70	-29.76
MW-1011	SW	-38.44	-37.90
MW-1012	NT	-23.36	-24.41
MW-1013	SE	-40.14	-40.51
MW-1014	SE	-37.05	-36.53
MW-1016	SW	-41.96	-43.05
MW-1017	W	-32.51	-31.96
MW-1018	W	-32.25	-30.63
MW-1019	NW	-29.37	-28.70
MW-1020	SW	-41.66	-42.45
MW-1021	SW	-42.46	-42.93
MW-1023	SW	-43.21	-42.70
MW-1026	NW	-31.46	-31.89
MW-1029	NW	-30.47	-30.25
MW-1033	W	-34.23	-33.97
MW-1036	W	-28.97	-28.20
MW-1037	SE	-27.98	-29.20
MW-1041	NW	-31.10	-32.20
Middle Zone Monitoring Wells:			
MW-17D	OT	-32.44	-33.33
MW-18D	OT	-31.20	-32.70
MW-19D	D	-32.74	-33.75
MW-20D	C	-34.11	-34.63
MW-21D	C	-33.95	-33.65
MW-23D	B	-40.34	-47.46
MW-24D	OT	-45.57	-44.46
MW-25D	A	-36.22	-35.70
MW-26D	A	-35.81	NM [b]
MW-27D	A	-33.41	-37.93
MW-28D	SE	-33.01	-34.21
MW-29D	OT	-30.69	-34.36
MW-52	D	-32.64	-33.74
MW-54	D	-33.62	-33.90
MW-55	D	-34.42	-35.12
MW-57	D	-33.39	-35.01
MW-69	A	-39.66	-40.98
MW-70	D	-33.19	-33.76

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b Monitoring well was added to network in January, 1989.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

RADIAN CORPORATION

Table 1-4. (Continued)

Monitoring Well Number [a]	Area	Groundwater-Level Elevation (feet above mean sea level) Current Measurement 01/03/89 - 01/05/89	Previous Measurement 09/29/88 - 09/30/88
Middle Zone Monitoring Wells:			
MW-71	A	-32.42	-36.92
MW-72	D	-34.25	-34.84
MW-74	NW	-34.46	-35.16
MW-75	C	-35.06	-34.54
MW-76	NW	-34.21	-34.73
MW-100	OT	-29.46	-36.11
MW-103	OT	-28.55	-33.27
MW-108	C	-32.24	-32.63
MW-113	C	NM [b]	-32.16
MW-115	C	-34.97	-34.57
MW-121	B	-38.58	-39.73
MW-129	C	-35.81	-35.58
MW-135	C	-38.10	-38.17
MW-1000	SW	-41.53	-42.33
MW-1003	NW	-31.86	-32.59
MW-1010	NW	-31.47	-33.12
MW-1015	SW	-42.02	-43.26
MW-1022	SW	-47.51	NM [c]
MW-1024	SW	-43.63	-43.13
MW-1027	NW	-31.96	-32.90
MW-1030	NW	-30.85	-30.65
MW-1032	W	-31.72	-31.25
MW-1034	W	NM [c]	-34.34
MW-1038	SE	-35.36	-43.23
MW-1042	NW	-31.32	-32.43
Deep "A" Zone Monitoring Wells:			
MW-22D	C	-37.14	-37.63
MW-51	D	-32.85	-33.87
MW-58	D	-32.73	-33.67
MW-59	D	-32.70	-33.71
MW-63	B	-41.26	-44.63
MW-64	B	-44.62	NM [d]
MW-66	B	-50.19	-50.91
MW-104	D	-31.92	-33.32
MW-105	D	-33.51	-33.94
MW-109	C	-32.86	-32.87
MW-112	C	NM [b]	-32.43
MW-122	B	-42.05	-42.27

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b No access to well.

c Access hole blocked.

d Monitoring well was added to network in January, 1989.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

RADIAN CORPORATION

Table 1-4. (Continued)

Monitoring Well Number [a]	Area	Groundwater-Level Elevation (feet above mean sea level) Current Measurement 01/03/89 - 01/05/89	Previous Measurement 09/29/88 - 09/30/88
Deep "A" Zone Monitoring Wells:			
MW-130	C	-37.77	-38.42
MW-134	C	-38.23	-39.10
MW-142	C	-37.76	-38.34
MW-143	C	-36.55	-37.20
MW-1001	NW	-31.80	-32.69
MW-1025	SW	-45.32	-46.29
MW-1028	NW	-31.55	-33.32
MW-1031	NW	-27.79	-31.08
MW-1035	W	NM [b]	-34.94
MW-1039	SE	-35.48	-43.82
MW-1040	NT	-28.75	-38.55
MW-1043	NW	-31.29	-32.62
Deep "B" Zone Monitoring Wells:			
MW-132	B	-43.94	-46.68
MW-133	C	-38.92	-40.81
MW-136	C	-37.80	-39.12
MW-138	C	-36.97	-39.00
Extraction Wells:			
EW-73	D	-42.98	NM [c]
EW-83	D	-36.84	NM [c]
EW-84	D	-39.02	NM [c]
EW-85	D	-34.79	-42.96
EW-86	D	-35.24	-41.84
EW-87	D	-33.87	-37.83

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b Access hole blocked.

c Sounding tube blocked with unknown obstruction.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

TABLE 1-5. RESULTS OF FIELD MEASUREMENTS (pH, CONDUCTIVITY, AND TEMPERATURE), GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Area A and Adjacent On-Base Areas				Area B and Adjacent On-Base Areas				Area C and Adjacent On-Base Areas				Area D and Adjacent On-Base Areas				Other On-Base Areas			
Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C
Shallow Zone Monitoring Wells																			
				MW-41S	7.1	250.0	20	MW-21S	5.3	230.0	18	MW-10	6.9	950.0	20				
				MW-120	8.2	220.0	18	MW-33S	6.8	770.0	17	MW-11	6.3	600.0	19				
								MW-44S	7.2	270.0	18	MW-12	7.7	250.0	20				
								MW-60	7.1	170.0	18	MW-14	7.0	340.0	20				
								MW-61	7.1	210.0	19	MW-15	7.3	210.0	18				
								MW-62	7.3	280.0	18	MW-88	7.2	190.0	18				
								MW-114	7.0	240.0	18	MW-89	7.4	160.0	18				
								MW-128	6.8	550.0	19	MW-90	6.4	140.0	18				
								MW-131	7.2	215.0	18	MW-91	7.4	250.0	18				
								MW-139	7.1	640.0	19	MW-92	8.1	190.0	19				
Middle Zone Monitoring Wells																			
MW-25D	6.8	350.0	17	MW-23D	7.4	200.0	19	MW-20D	7.0	240.0	19	MW-52	8.4	200.0	19	MW-24D	6.6	210.0	18
MW-26D	7.1	240.0	19	MW-121	6.8	340.0	18	MW-21D	7.1	250.0	18	MW-54	7.2	230.0	18				
MW-71	7.0	140.0	19					MW-75	7.1	140.0	19	MW-55	7.7	170.0	19				
								MW-115	7.3	240.0	18	MW-57	7.4	200.0	19				
								MW-129	6.9	240.0	19	MW-70	7.5	210.0	18				
								MW-135	8.0	210.0	19	MW-72	7.1	440.0	18				
Deep 'A' Zone Monitoring Wells																			
				MW-63	7.3	310.0	19	MW-22D	7.5	205.0	18	MW-51	8.0	190.0	19				
				MW-64	7.4	220.0	19	MW-130	7.1	400.0	19	MW-58	7.4	230.0	18				
				MW-122	8.1	210.0	18	MW-134	7.5	240.0	19	MW-59	7.4	230.0	18				
								MW-142	7.3	230.0	19	MW-104	8.0	260.0	19				
								MW-143	7.2	250.0	19	MW-105	7.6	270.0	18				
Deep 'B' Zone Monitoring Wells																			
				MW-132	7.1	290.0	18	MW-133	7.5	270.0	20								
								MW-136	7.0	350.0	18								
								MW-138	8.0	260.0	18								

NM = Not measured

TABLE 1-5. (Continued)

Area A and Adjacent On-Base Areas				Area B and Adjacent On-Base Areas				Area C and Adjacent On-Base Areas				Area D and Adjacent On-Base Areas				Other On-Base Areas			
Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C
Extraction Wells																			
(Area C Extraction Wells are screened in the deep 'A' monitoring zone)																			
(Area D Extraction Wells are screened in more than one monitoring zone)																			
January:																			
								EW-137	7.2	480.0	18	EW-73	6.5	750.0	19				
								EW-140	7.3	360.0	18	EW-83	7.3	220.0	19				
								EW-141	7.2	440.0	18	EW-84	7.4	830.0	19				
								EW-144	7.1	330.0	19	EW-85	7.2	210.0	20				
												EW-86	7.2	210.0	19				
												EW-87	7.4	220.0	18				

NM = Not measured

TABLE 1-5. (Continued)

Southeast Area				Southwest Area				West Area				Northwest Area				Northeast Area			
Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C	Well Number	pH -log[+H]	Cond. u mhos	Temp. °C
Shallow Zone Monitoring Wells																			
MW-1013	7.0	280.0	18	MW-1016	7.8	300.0	19					MW-1002	7.5	220.0	17				
MW-1014	6.3	200.0	19	MW-1020	8.8	210.0	20					MW-1004	8.4	210.0	19				
MW-1037	6.6	340.0	18	MW-1021	6.9	320.0	19					MW-1005	7.6	290.0	17				
				MW-1023	7.0	220.0	18					MW-1019	7.7	500.0	19				
Middle Zone Monitoring Wells																			
MW-28D	6.9	200.0	19	MW-1000	7.4	230.0	18					MW-1003	8.5	200.0	19				
MW-1038	7.4	260.0	18	MW-1015	7.2	220.0	19												
				MW-1022	7.1	210.0	19												
				MW-1024	7.0	220.0	18												
Deep 'A' Zone Monitoring Wells																			
MW-1039	7.3	260.0	18	MW-1025	6.9	210.0	18					MW-1001	9.0	200.0	19				
Deep 'B' Zone Monitoring Wells																			

NM = Not measured

RADIAN CORPORATION

TABLE 1-6. WELLS CONTAINING ANALYTES AT CONCENTRATIONS EXCEEDING STATE AND FEDERAL DRINKING WATER STANDARDS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-73	01/05/89	D	8240	Vinyl chloride		SAC	2100	2	1
				1,1-Dichloroethene		SAC	9900	6	7
				1,1-Dichloroethane		SAC	800	20	NE
				Total 1,2-Dichloroethene		SAC	1100	16	NE
				1,1,1-Trichloroethane		SAC	810	200	200
				Trichloroethene		SAC	1300	5	5
EW-73	02/01/89	D	8010	Vinyl chloride		SAC	1500P	2	1
				Methylene chloride		SAC	1300P	40	NE
				1,1-Dichloroethene		SAC	7000P	6	7
				1,1-Dichloroethane		SAC	800P	20	NE
				Total 1,2-Dichloroethene		SAC	730P	16	NE
				1,1,1-Trichloroethane		SAC	790P	200	200
				Trichloroethene		SAC	1100P	5	5
EW-73	03/01/89	D	8010	Vinyl chloride		SAC	1000P	2	1
				1,1-Dichloroethene		SAC	5400P	6	7
				1,1-Dichloroethane		SAC	930P	20	NE
				Total 1,2-Dichloroethene		SAC	740P	16	NE
				1,1,1-Trichloroethane		SAC	930P	200	200
				Trichloroethene		SAC	690P	5	5
			8020	Toluene		SAC	220C	100	NE
EW-83	01/04/89	D	8010	1,1-Dichloroethene		SAC	390P	6	7
				Trichloroethene		SAC	41P	5	5
EW-83	02/02/89	D	8010	Methylene chloride		SAC	150C	40	NE
				1,1-Dichloroethene		SAC	650C	6	7
				Tetrachloroethene		SAC	7.8C	4	NE
EW-83	03/01/89	D	8010	1,1-Dichloroethene		SAC	410P	6	7
				Trichloroethene		SAC	42P	5	5
EW-84	01/10/89	D	8010	Vinyl chloride	FDA	SAC	410P	2	1
				Methylene chloride	FDA	SAC	40P	40	NE
				1,1-Dichloroethene	FDA	SAC	1200P	6	7
				1,1-Dichloroethane	FDA	SAC	240P	20	NE

All units are ug/l.
EW = Extraction well
NE = Not established
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE 1-6. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-84	01/10/89	D	8010	Total 1,2-Dichloroethene	FDA	SAC	230P	16	NE
				1,2-Dichloroethane	FDA	SAC	65P	1	5
				Trichloroethene	FDA	SAC	980P	5	5
				Vinyl chloride	FDB	SAC	620P	2	1
				1,1-Dichloroethene	FDB	SAC	2000P	6	7
				1,1-Dichloroethane	FDB	SAC	370P	20	NE
				Total 1,2-Dichloroethene	FDB	SAC	210P	16	NE
				1,2-Dichloroethane	FDB	SAC	56P	1	5
				1,1,1-Trichloroethane	FDB	SAC	210P	200	200
				Trichloroethene	FDB	SAC	1600P	5	5
EW-84	02/02/89	D	8010	Vinyl chloride		SAC	440C	2	1
				Methylene chloride		SAC	56C	40	NE
				1,1-Dichloroethene		SAC	1300C	6	7
				1,1-Dichloroethane		SAC	207C	20	NE
				Total 1,2-Dichloroethene		SAC	220C	16	NE
				1,2-Dichloroethane		SAC	120C	1	5
				Trichloroethene		SAC	1200C	5	5
EW-84	03/01/89	D	8010	Vinyl chloride		SAC	350C	2	1
				1,1-Dichloroethene		SAC	860C	6	7
				1,1-Dichloroethane		SAC	180C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,2-Dichloroethane		SAC	110C	1	5
				Trichloroethene		SAC	720C	5	5
EW-85	01/04/89	D	8010	1,1-Dichloroethene		SAC	600C	6	7
				1,2-Dichloroethane		SAC	13C	1	5
				Trichloroethene		SAC	400C	5	5
EW-85	02/02/89	D	8010	Methylene chloride		SAC	92P	40	NE
				1,1-Dichloroethene		SAC	880P	6	7
				Trichloroethene		SAC	660P	5	5
EW-85	03/01/89	D	8010	1,1-Dichloroethene		SAC	550P	6	7
				1,1-Dichloroethane		SAC	26P	20	NE
				Trichloroethene		SAC	330P	5	5
EW-86	01/04/89	D	8010	1,1-Dichloroethene		SAC	100P	6	7
				Trichloroethene		SAC	42P	5	5

All units are ug/l.
EW = Extraction well
NE = Not established
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
FDB = Second part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE 1-6. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-86	02/02/89	D	8010	1,1-Dichloroethene		SAC	74P	6	7
				Trichloroethene		SAC	40P	5	5
EW-86	03/01/89	D	8010	1,1-Dichloroethene		SAC	56P	6	7
				Trichloroethene		SAC	25P	5	5
EW-87	01/05/89	D	8010	1,1-Dichloroethene		SAC	100P	6	7
				Trichloroethene		SAC	39P	5	5
EW-87	02/02/89	D	8010	1,1-Dichloroethene		SAC	140C	6	7
				Trichloroethene		SAC	58C	5	5
EW-87	03/01/89	D	8010	1,1-Dichloroethene		SAC	100C	6	7
				Trichloroethene		SAC	36C	5	5
EW-137	01/12/89	C	8010	Trichloroethene		SAC	490C	5	5
EW-137	02/02/89	C	8010	Trichloroethene		SAC	480C	5	5
EW-137	03/01/89	C	8010	Trichloroethene		SAC	310P	5	5
EW-140	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	28C	16	NE
				Trichloroethene		SAC	140C	5	5
EW-140	02/02/89	C	8010	Total 1,2-Dichloroethene		SAC	30C	16	NE
				Trichloroethene		SAC	160C	5	5
EW-140	03/01/89	C	8010	Total 1,2-Dichloroethene		SAC	25C	16	NE
				Trichloroethene		SAC	93C	5	5
EW-141	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE
				Trichloroethene		SAC	230C	5	5
EW-141	02/02/89	C	8010	Total 1,2-Dichloroethene		SAC	20C	16	NE
				Trichloroethene		SAC	210C	5	5
EW-141	03/01/89	C	8010	Trichloroethene		SAC	120P	5	5
EW-144	01/18/89	C	8010	Trichloroethene		SAC	310C	5	5
			8240	Trichloroethene		SAC	360	5	5

All units are ug/l.
EW = Extraction well
NE = Not established
SAC = Radian Analytical Services, Sacramento
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE 1-6. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-144	02/02/89	C	8010	Trichloroethene		SAC	340C	5	5
EW-144	03/01/89	C	8010	Trichloroethene		SAC	240C	5	5
MW-10	01/25/89	D	8010	Vinyl chloride		SAC	73C	2	1
				1,1-Dichloroethene		SAC	840C	6	7
				1,1-Dichloroethane		SAC	110C	20	NE
				Total 1,2-Dichloroethene		SAC	130C	16	NE
				1,2-Dichloroethane		SAC	250C	1	5
				Trichloroethene		SAC	1300C	5	5
				1,2-Dichlorobenzene		SAC	140C	130	NE
			8020	1,2-Dichlorobenzene		SAC	140P	130	NE
MW-11	01/31/89	D	8010	1,1-Dichloroethene		SAC	19000C	6	7
				1,1-Dichloroethane		SAC	270C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,1,1-Trichloroethane		SAC	5600C	200	200
				Trichloroethene		SAC	2900C	5	5
MW-12	01/25/89	D	8010	1,1-Dichloroethene		SAC	2600P	6	7
				1,1,1-Trichloroethane		SAC	360P	200	200
				Trichloroethene		SAC	590P	5	5
				Tetrachloroethene		SAC	38P	4	NE
MW-14	01/26/89	D	8010	1,1-Dichloroethene		SAC	4600C	6	7
				1,2-Dichloroethane		SAC	34C	1	5
				1,1,1-Trichloroethane		SAC	2300C	200	200
				Trichloroethene		SAC	4100C	5	5
MW-15	01/25/89	D	8010	1,1-Dichloroethene		SAC	580C	6	7
				Trichloroethene		SAC	340C	5	5
MW-26D	01/23/89	A	8010	Trichloroethene		SAC	22C	5	5
MW-33S	01/11/89	C	8010	Methylene chloride		SAC	1100U	40	NE
				Total 1,2-Dichloroethene		SAC	580P	16	NE
				1,2-Dichloroethane		SAC	200P	1	5
				Trichloroethene		SAC	17000P	5	5
MW-41S	01/16/89	B	8010	Trichloroethene		SAC	3300C	5	5

All units are ug/l.
EW = Extraction well
MW = Monitoring well
NE = Not established
SAC = Radian Analytical Services, Sacramento

C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed
U = Unconfirmed, second column not requested

RADIAN CORPORATION

TABLE 1-6. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
MW-41S	01/16/89	B	8010	Tetrachloroethene		SAC	240C	4	NE
MW-44S	01/18/89	C	6010	Chromium		SAC	55	NE	50
MW-61	01/20/89	C	8010	Trichloroethene		SAC	12C	5	5
MW-63	01/19/89	B	8010	Total 1,2-Dichloroethene	FDA	SAC	29C	16	NE
				Trichloroethene	FDA	SAC	55C	5	5
				Total 1,2-Dichloroethene	FDB	SAC	31C	16	NE
				Trichloroethene	FDB	SAC	59C	5	5
MW-72	01/06/89	D	8010	1,1-Dichloroethene		SAC	370P	6	7
				1,1-Dichloroethane		SAC	49P	20	NE
				Total 1,2-Dichloroethene		SAC	34P	16	NE
				1,2-Dichloroethane		SAC	130P	1	5
				Trichloroethene		SAC	550P	5	5
MW-75	01/25/89	C	8010	Trichloroethene		SAC	12C	5	5
MW-89	01/16/89	D	8010	1,1-Dichloroethene		SAC	6.2C	6	7
MW-120	01/10/89	B	8010	Trichloroethene	FDB	SAC	5.1C	5	5
MW-128	01/12/89	C	8010	Methylene chloride		SAC	800C	40	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				Trichloroethene		SAC	17000C	5	5
MW-129	01/12/89	C	8010	Trichloroethene	FDA	SAC	170C	5	5
				Trichloroethene	FDB	SAC	140C	5	5
MW-131	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	19P	16	NE
				Trichloroethene		SAC	90P	5	5
MW-132	01/16/89	B	8010	Total 1,2-Dichloroethene		SAC	25C	16	NE
				Trichloroethene		SAC	82C	5	5
MW-135	01/16/89	C	8010	Trichloroethene		SAC	25C	5	5
MW-136	01/26/89	C	8010	Trichloroethene		SAC	230C	5	5
MW-139	01/16/89	C	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE

All units are ug/l.
MW = Monitoring well
NE = Not established
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
FDB = Second part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed

RADIAN CORPORATION

TABLE 1-6. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis	Lab	Concentration	DHS Action Level	U.S. EPA Primary MCL
MW-139	01/16/89	C	8010	1,2-Dichloroethane		SAC	1.1C	1	5
				Trichloroethene		SAC	95C	5	5
			6010	Cadmium		SAC	33	NE	10
MW-1004	01/17/89	NW	8010	1,1-Dichloroethene		SAC	7.0P	6	7
MW-1005	01/13/89	NW	8010	1,1-Dichloroethene		SAC	20C	6	7
				Trichloroethene		SAC	5.2C	5	5
MW-1021	01/19/89	SW	8010	Trichloroethene		SAC	15C	5	5
MW-1022	01/19/89	SW	8010	Trichloroethene	FDA	SAC	9.1C	5	5
				Trichloroethene	FDB	SAC	10C	5	5

All units are ug/l.
MW = Monitoring well
NW = Northwest area
SAC = Radian Analytical Services, Sacramento
FDA = First part of field duplicate sample
FDB = Second part of field duplicate sample
C = Presence of analyte confirmed by second column
P or PC = Identity previously confirmed
SW = Southwest area

- 3 wells were not sampled this time (MW-27D, MW-74, and MW-76);
- 1 well contained contaminants below state and federal drinking water standards during this sampling period (MW-55);
- 2 wells that were not sampled last quarter contained contaminants above standards during this sampling period (MW-11 and EW-144); and
- 2 wells contained contaminants above drinking water standards during this sampling period (MW-44S and MW-89).

Both MW-44S and MW-89 have contained contaminants above drinking water standards during previous sampling rounds (Appendix A-3). Trichloroethene (TCE) concentrations were above drinking water standards in 33 of the 36 wells containing contaminants above drinking water standards. The concentrations of TCE detected in the wells sampled during this sampling period are shown for each monitoring zone on Plates 7, 8, and 9. Deep "B" zone monitoring wells are also included on Plate 9.

In general, the analytical results indicate that contaminants continue to be detected in the same wells. There have been some significant changes in contaminant concentrations in several wells. Samples from MW-55, a middle zone monitoring well located in Area D have shown significant decreases for five Method 8010 analytes. These analytes (TCE, total 1,2-dichloroethene, 1,1-dichloroethane, 1,1-dichloroethene and 1,2-dichloroethane) have been decreasing over the past several sampling events and are now below drinking water standards. Three other wells in Area D have also shown significant decreases in contaminant concentrations. These wells, MW-10, MW-12 and MW-15 are all screened in the shallow monitoring zone. In Area B, the TCE concentration in MW-41S increased from 2,900 to 3,300 ug/L. This is compared to the first quarter of 1988 when TCE concentrations were 140 ug/L. In the Southwest area, low levels (0.32 ug/L) of TCE were detected in MW-1020. Trichloroethene has been detected in this shallow zone monitoring well during one other sampling event, fourth quarter 1987.

1.2.1 Summary of QA/QC Data

The QA/QC data presented in this report have been evaluated in terms of the data quality objectives specified in Section 4.0 of the McClellan AFB Quality Assurance Project Plan (Radian, April 1989). These objectives specify performances of each method in terms of accuracy, precision and completeness. The data quality objectives for precision are a relative percent difference (RPD) of less than or equal to 50 percent for field duplicate samples, and an RPD of less than or equal to 30 percent for laboratory duplicate analyses. The objectives for accuracy are analyte-specific and are listed in each method standard operating procedure. The objective for completeness is to have greater than 90 percent of all data reported as valid. The objective for comparability and representativeness are more a function of the sampling program and can be evaluated only in terms of the objectives of the program. However, comparability is achieved by using standard methods of sampling and analysis, reporting in standard units, and using standard and comprehensive reporting formats.

There were no significant problems in overall quality control, as shown in the summary of QA/QC procedures presented in this report. A summary of the overall QC data and results is presented in Table 1-7, and Table 1-8 summarizes the qualified data. The term "qualified data" refers to data that do not meet the data quality objectives of the program. Valid data meet the data quality objectives of the program. Table 1-9 summarizes the holding times for samples prior to analyses.

More than 99 percent of the data have been validated and are unqualified; the exceptions are noted in Table 1-8. The objectives for accuracy, precision, and completeness were met. The required holding times were met. All out-of-control data were qualified as estimated. Out of a total of approximately 9,100 individually detected and non-detected analytical results, 79 detected results were qualified. The completeness objective of 90 percent valid data has been attained.

RADIAN CORPORATION

TABLE 1-7. SUMMARY OF QUALITY CONTROL RESULTS GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY - MARCH 1989

SW-846 Method	Number Performed	Compound (Number of Occurrences)	Range of Results
Reagent Blanks			
8010	24	N.D.	N.A.
8020	16	N.D.	N.A.
8240	2	N.D.	N.A.
6010	14	Zinc (12)	0.002 - 0.037 mg/L
		Calcium (8)	0.012 - 1.2 mg/L
		Iron (13)	0.009 - 0.07 mg/L
		Magnesium (1)	0.26 mg/L
		Sodium (6)	0.055 - 0.25 mg/L
		Silicon (3)	0.08 - 0.088 mg/L
7196	11	N.D.	N.A.
Trip Blanks			
8010	6	Trichloroethene (1)[a]	0.22 ug/L
Ambient Blanks			
8010	8	Methylene Chloride (2)	1.6 - 1.7 ug/L
8020	1	N.D.	N.A.
Equipment Blanks			
8010	6	Methylene Chloride (2)	0.42 - 0.47 ug/L

(Continued)

N.A = Not applicable.
N.D. = Not detected.

[a] Detected concentration did not affect field sample results. Occurrence probably due to random contamination during sample preparation or handling. Corrective action taken was notification of sampling crew.

RADIAN CORPORATION

TABLE 1-7. (Continued)

SW-846 Method	Number Performed	Compound	Range of Results (RPD %)	Acceptance Criteria (RPD %)	Results Not Meeting Criteria[b]
Duplicate Samples					
8010	6	8 compounds	0 - 48	50	0
6010	5	13 Metals	0 - 165	50	6
7196	1	Chromium VI	N.C.	50	0
Matrix Spike Duplicate					
8010	11	3 compounds	0 - 35	30	2
8020	4	3 compounds	1 - 13	30	0
Matrix Spike					
8010	9	1,1-Dichloroethene	58 - 97	28 - 167	0
	10	Trichlorobenzene	36 - 106	35 - 146	0
	10	Chlorobenzene	68 - 99	38 - 150	0
8020	3	Chlorobenzene	79 - 94	55 - 135	0
	3	Benzene	86 - 93	39 - 150	0
	3	Toluene	82 - 95	46 - 148	0
Analytical Spikes					
6010	48	Thallium	79 - 142	75 - 125	6
	48	Zinc	70 - 105	75 - 125	1
	48	Barium	28 - 111	75 - 125	2
	48	Manganese	51 - 108	75 - 125	2
	28	Lead	92 - 100	75 - 125	0
	48	20 other metals[c]	79 - 116	75 - 125	0
Surrogate Spikes					
8010	197	1-Bromo-4-fluorobenzene	68 - 138	40 - 140	0
8020	58	1-Bromo-4-fluorobenzene	73 - 110	40 - 140	0
8240	4	4-Bromofluorobenzene	100 - 101	94 - 117	0
		1,2-Dichloroethane	94 - 100	77 - 126	0
		Toluene - d8	99 - 100	92 - 111	0

[a] The acceptance criteria represent the upper acceptable bound of RPD (%) for duplicates and the range in percent recovery for the spikes.

[b] Refers to individual analytical results, not overall sample results.

[c] The other metals are silver, aluminum, arsenic, boron, beryllium, calcium, cadmium, cobalt, chromium, copper, iron, potassium, magnesium, molybdenum, sodium, nickel, antimony, selenium, silicon, and vanadium.

N.C. = Not Calculated.

RADIAN CORPORATION

TABLE 1-8. SUMMARY OF QUALIFIED DATA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY - MARCH 1989, McCLELLAN AFB

Sample Number	U.S. EPA Method	Analyte(s)	Type of Qualification	Reason
MW-12	6010	Thallium	A	High Spike Recovery
MW-14	8010	Trichloroethene	PF	High RPD
MW-21S	6010	Thallium	A	High Spike Recovery
MW-25D	6010	Thallium	A	High Spike Recovery
		Vanadium	PF	High RPD
MW-25D-FD	6010	Thallium	A	High Spike Recovery
MW-63	8010	Trichloroethene	PL	High RPD
MW-75	6010	Thallium	A	High Spike Recovery
MW-120 &	6010	Barium	A	High Spike Recovery
120-FD		Manganese	A	High Spike Recovery
MW-1014	6010	Thallium	A	High Spike Recovery
TB-03	8010	Trichloroethene	O	Detected in Reagent Blank
AB-28D	8010	Methylene Chloride	O	Detected in Reagent Blank
AB-1019	8010	Methylene Chloride	O	Detected in Reagent Blank
EB-10	8010	Methylene Chloride	O	Detected in Reagent Blank
EB-14	8010	Methylene Chloride	O	Detected in Reagent Blank
All*	6010	Zinc and Iron	R	Detected in Reagent Blank

A = Qualified as inaccurate due to matrix spike recoveries outside the limits.
PL = Qualified as estimated due to high laboratory variability as measured by laboratory matrix spikes/matrix spike duplicates.
PF = Qualified as estimated due to high total variability as measured by field duplicates.
RPD = Relative percent difference.
R = Detected in reagent blank.
O = Detected in blank other than reagent blank

*. = Except the following results are not qualified:
Zinc - MW-25D and 25D-FD, MW-90, MW-105, MW-120 and 120-FD, MW-130, MW-134, MW-136, and MW-1004.
Iron - MW-21S, MW-25D AND 25D-FD, MW-44S, MW-60, MW-61, MW-62, MW-71, MW-75, MW-90, MW-91, MW-105, MW-128, MW-130, MW-139, MW-1013, MW-1014, and MW-1016.

RADIAN CORPORATION

TABLE 1-9. REPORT OF HOLDING TIMES, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

		U.S.EPA METHOD			SW8010	SW8020	SW8240	6010	7196
		MAXIMUM HOLDING TIME			14 DAYS	14 DAYS	14 DAYS	6 MONTHS	24 HOURS
WELL	DATE SAMPLED	FIELD ANALYSIS	LAB ANALYSIS	LAB	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED
EW-73	01/05/89			SAC			01/14/89		
EW-73	02/01/89			SAC	02/03/89	02/03/89			
EW-73	03/01/89			SAC	03/03/89	03/06/89			
EW-73	03/01/89		MS	SAC	03/03/89	03/06/89			
EW-73	03/01/89		MSD	SAC	03/03/89	03/06/89			
EW-83	01/04/89			SAC	01/11/89				
EW-83	02/02/89			SAC	02/03/89				
EW-83	03/01/89			SAC	03/03/89				
EW-84	01/10/89	FDA		SAC	01/12/89	01/12/89			
EW-84	01/10/89	FDB		SAC	01/12/89	01/12/89			
EW-84	02/02/89			SAC	02/03/89				
EW-84	03/01/89			SAC	03/03/89				
EW-85	01/04/89			SAC	01/11/89				
EW-85	02/02/89			SAC	02/03/89				
EW-85	03/01/89			SAC	03/03/89				
EW-86	01/04/89			SAC	01/11/89				
EW-86	02/02/89			SAC	02/03/89				
EW-86	03/01/89			SAC	03/03/89				
EW-87	01/05/89			SAC	01/11/89				01/06/89
EW-87	02/02/89			SAC	02/03/89				
EW-87	03/01/89			SAC	03/03/89				
EW-137	01/12/89			SAC	01/17/89	01/17/89		01/25/89	01/13/89
EW-137	01/12/89		AS	SAC				01/25/89	
EW-137	02/02/89			SAC	02/03/89	02/03/89			
EW-137	03/01/89			SAC	03/03/89	03/03/89			
EW-140	01/12/89			SAC	01/17/89	01/17/89		01/25/89	01/13/89
EW-140	01/12/89		AS	SAC				01/25/89	
EW-140	02/02/89			SAC	02/03/89	02/03/89			
EW-140	03/01/89			SAC	03/03/89	03/03/89			
EW-141	01/12/89			SAC	01/17/89	01/17/89		01/25/89	01/13/89
EW-141	01/12/89		AS	SAC				01/25/89	
EW-141	02/02/89			SAC	02/03/89	02/03/89			
EW-141	03/01/89			SAC	03/03/89	03/03/89			
EW-144	01/18/89			SAC	01/23/89	01/23/89	01/24/89	01/27/89	01/19/89
EW-144	01/18/89		AS	SAC				01/27/89	
EW-144	02/02/89			SAC	02/03/89	02/03/89			
EW-144	03/01/89			SAC	03/03/89	03/03/89			

EW = Extraction Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis
SAC = Radian Analytical Services, Sacramento
MS = Matrix spike
MSD = Matrix spike duplicate
AS = Analytical spike

RADIAN CORPORATION

TABLE 1-9. (continued)

	U.S.EPA METHOD MAXIMUM HOLDING TIME			SW8010 14 DAYS	SW8020 14 DAYS	SW8240 14 DAYS	6010 6 MONTHS	7196 24 HOURS
WELL	DATE SAMPLED	FIELD ANALYSIS	LAB ANALYSIS	LAB	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED
MW-10	01/25/89			SAC	01/30/89	01/30/89			
MW-10	01/25/89		MS	SAC	01/30/89	01/30/89			
MW-10	01/25/89		MSD	SAC	01/30/89	01/30/89			
MW-11	01/31/89			SAC	02/02/89	02/02/89			
MW-11	01/31/89		MS	SAC	02/02/89	02/02/89			
MW-11	01/31/89		MSD	SAC	02/02/89	02/02/89			
MW-12	01/25/89			SAC	01/30/89	01/30/89		02/08/89	01/26/89
MW-12	01/25/89		AS	SAC				02/08/89	
MW-14	01/26/89			SAC	01/31/89	01/31/89			
MW-14	01/26/89		MS	SAC	01/31/89	01/31/89			
MW-14	01/26/89		MSD	SAC	01/31/89	01/31/89			
MW-15	01/25/89			SAC	01/30/89	01/30/89			
MW-20D	01/23/89			SAC	01/27/89			02/03/89	01/23/89
MW-20D	01/23/89		AS	SAC				02/03/89	
MW-21D	01/23/89			SAC	01/27/89			02/03/89	01/23/89
MW-21D	01/23/89		AS	SAC				02/03/89	
MW-21S	01/24/89			SAC	01/30/89			02/08/89	01/25/89
MW-21S	01/24/89		AS	SAC				02/08/89	
MW-22D	01/12/89			SAC	01/20/89			01/25/89	01/13/89
MW-22D	01/12/89		AS	SAC				01/25/89	
MW-23D	01/09/89			SAC	01/12/89	01/12/89			
MW-24D	01/13/89			SAC	01/19/89				
MW-25D	01/24/89	FDA		SAC	01/30/89			02/08/89	01/25/89
MW-25D	01/24/89	FDA	AS	SAC				02/08/89	
MW-25D	01/24/89	FDB		SAC	01/30/89			02/08/89	01/25/89
MW-25D	01/24/89	FDB	AS	SAC				02/08/89	
MW-26D	01/23/89			SAC	01/26/89	01/26/89			
MW-26D	01/23/89		MS	SAC	01/26/89				
MW-26D	01/23/89		MSD	SAC	01/26/89				
MW-28D	01/23/89			SAC	01/30/89			02/03/89	01/23/89
MW-28D	01/23/89		AS	SAC				02/03/89	
MW-28D	01/23/89		MS	SAC	01/27/89				
MW-28D	01/23/89		MSD	SAC	01/27/89				
MW-33S	01/11/89			SAC	01/17/89	01/17/89		01/23/89	01/12/89
MW-33S	01/11/89		AS	SAC				01/23/89	
MW-41S	01/16/89			SAC	01/24/89	01/24/89		02/03/89	01/17/89
MW-41S	01/16/89		AS	SAC				02/03/89	
MW-44S	01/18/89			SAC	01/31/89			01/27/89	01/19/89

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis
SAC = Radian Analytical Services, Sacramento
MS = Matrix spike
MSD = Matrix spike duplicate
AS = Analytical spike

RADIAN CORPORATION

TABLE 1-9. (continued)

	U.S.EPA METHOD MAXIMUM HOLDING TIME			SW8010 14 DAYS	SW8020 14 DAYS	SW8240 14 DAYS	6010 6 MONTHS	7196 24 HOURS
WELL	DATE SAMPLED	FIELD ANALYSIS	LAB ANALYSIS	LAB	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED
MW-44S	01/18/89		AS	SAC				01/27/89	
MW-51	01/06/89			SAC	01/11/89				
MW-52	01/18/89			SAC	01/31/89				
MW-54	01/17/89			SAC	01/20/89				
MW-55	01/06/89			SAC	01/11/89				
MW-57	01/09/89			SAC	01/11/89	01/11/89			
MW-58	01/09/89			SAC	01/11/89	01/11/89			
MW-59	01/05/89			SAC	01/11/89				
MW-60	01/13/89			SAC	01/19/89			01/23/89	
MW-60	01/13/89		AS	SAC				01/23/89	
MW-61	01/20/89			SAC	01/27/89			02/03/89	
MW-61	01/20/89		AS	SAC				02/03/89	
MW-62	01/11/89			SAC	01/13/89			01/23/89	
MW-62	01/11/89		AS	SAC				01/23/89	
MW-63	01/19/89	FDA		SAC	01/30/89				
MW-63	01/19/89	FDB		SAC	01/30/89				
MW-63	01/19/89	FDB	MS	SAC	01/23/89				
MW-63	01/19/89	FDB	MSD	SAC	01/23/89				
MW-64	01/24/89			SAC	01/30/89				
MW-64	01/24/89		MS	SAC	01/30/89				
MW-64	01/24/89		MSD	SAC	01/30/89				
MW-70	01/05/89			SAC	01/11/89				
MW-71	01/30/89			SAC	01/31/89			02/16/89	01/31/89
MW-71	01/30/89		AS	SAC				02/16/89	
MW-72	01/06/89			SAC	01/11/89				
MW-75	01/25/89			SAC	01/30/89	01/30/89		02/08/89	
MW-75	01/25/89		AS	SAC				02/08/89	
MW-88	01/17/89			SAC	01/20/89				
MW-89	01/16/89			SAC	01/20/89	01/20/89			
MW-90	01/16/89			SAC	01/20/89			02/03/89	
MW-90	01/16/89		AS	SAC				02/03/89	
MW-91	01/13/89			SAC	01/19/89	01/19/89		01/23/89	
MW-91	01/13/89		AS	SAC				01/23/89	
MW-92	01/17/89			SAC	01/20/89				
MW-104	01/20/89			SAC	01/27/89				
MW-104	01/20/89		MS	SAC	01/27/89				
MW-104	01/20/89		MSD	SAC	01/27/89				
MW-105	01/17/89			SAC	01/20/89			02/06/89	01/18/89

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis
SAC = Radian Analytical Services, Sacramento
MS = Matrix spike
MSD = Matrix spike duplicate
AS = Analytical spike

RADIAN CORPORATION

TABLE 1-9. (continued)

	U.S.EPA METHOD				SW8010	SW8020	SW8240	6010	7196
	MAXIMUM HOLDING TIME				14 DAYS	14 DAYS	14 DAYS	6 MONTHS	24 HOURS
WELL	DATE SAMPLED	FIELD ANALYSIS	LAB ANALYSIS	LAB	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED
MW-105	01/17/89		AS	SAC				02/06/89	
MW-114	01/20/89			SAC	01/27/89				
MW-115	01/16/89			SAC	01/20/89			02/03/89	01/17/89
MW-115	01/16/89		AS	SAC				02/03/89	
MW-120	01/10/89	FDA		SAC	01/17/89			01/23/89	
MW-120	01/10/89	FDA	AS	SAC				01/23/89	
MW-120	01/10/89	FDB		SAC	01/17/89			01/23/89	
MW-120	01/10/89	FDB	AS	SAC				01/23/89	
MW-121	01/13/89			SAC	01/19/89			01/23/89	
MW-121	01/13/89		AS	SAC				01/23/89	
MW-122	01/10/89			SAC	01/12/89				
MW-128	01/12/89			SAC	01/17/89	01/17/89		01/25/89	
MW-128	01/12/89		AS	SAC				01/25/89	
MW-129	01/12/89	FDA		SAC	01/23/89			01/25/89	
MW-129	01/12/89	FDA	AS	SAC				01/25/89	
MW-129	01/12/89	FDB		SAC	01/20/89			01/25/89	
MW-129	01/12/89	FDB	AS	SAC				01/25/89	
MW-130	01/12/89			SAC	01/19/89			01/25/89	01/13/89
MW-130	01/12/89		AS	SAC				01/25/89	
MW-130	01/12/89		MS	SAC	01/25/89				
MW-130	01/12/89		MSD	SAC	01/25/89				
MW-131	01/12/89			SAC	01/19/89			01/25/89	
MW-131	01/12/89		AS	SAC				01/25/89	
MW-132	01/16/89			SAC	01/20/89				
MW-133	01/19/89	FDA		SAC	01/23/89			02/02/89	01/20/89
MW-133	01/19/89	FDA	AS	SAC				02/02/89	
MW-133	01/19/89	FDB		SAC	01/23/89			02/02/89	01/20/89
MW-133	01/19/89	FDB	AS	SAC				02/02/89	
MW-134	01/16/89			SAC	01/20/89			02/03/89	01/17/89
MW-134	01/16/89		AS	SAC				02/03/89	
MW-135	01/16/89			SAC	01/20/89			02/03/89	01/17/89
MW-135	01/16/89		AS	SAC				02/03/89	
MW-136	01/26/89			SAC	01/31/89			02/16/89	
MW-136	01/26/89		AS	SAC				02/16/89	
MW-138	01/12/89	FDA		SAC	01/20/89			01/25/89	
MW-138	01/12/89	FDA	AS	SAC				01/25/89	
MW-138	01/12/89	FDB		SAC	01/20/89			01/25/89	
MW-138	01/12/89	FDB	AS	SAC				01/25/89	

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis
SAC = Radian Analytical Services, Sacramento
MS = Matrix spike
MSD = Matrix spike duplicate
AS = Analytical spike

RADIAN CORPORATION

TABLE 1-9. (continued)

WELL	DATE SAMPLED	FIELD ANALYSIS	LAB ANALYSIS	LAB	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED
U.S.EPA METHOD MAXIMUM HOLDING TIME					SW8010 14 DAYS	SW8020 14 DAYS	SW8240 14 DAYS	6010 6 MONTHS	7196 24 HOURS
MW-139	01/16/89			SAC	01/20/89			02/03/89	01/17/89
MW-139	01/16/89		AS	SAC				02/03/89	
MW-142	01/18/89			SAC	01/23/89			01/27/89	01/19/89
MW-142	01/18/89		AS	SAC				01/27/89	
MW-142	01/18/89		MS	SAC	01/23/89				
MW-142	01/18/89		MSD	SAC	01/23/89				
MW-143	01/18/89			SAC	02/01/89			01/27/89	01/19/89
MW-143	01/18/89		AS	SAC				01/27/89	
MW-1000	01/09/89			SAC	01/11/89				
MW-1001	01/17/89			SAC	01/20/89				
MW-1002	01/13/89			SAC	01/19/89				
MW-1003	01/17/89			SAC	01/20/89				
MW-1004	01/17/89			SAC	01/23/89			02/06/89	
MW-1004	01/17/89		AS	SAC				02/06/89	
MW-1005	01/13/89			SAC	01/20/89				
MW-1013	01/18/89			SAC	01/23/89			01/27/89	
MW-1013	01/18/89		AS	SAC				01/27/89	
MW-1014	01/24/89			SAC	01/30/89			02/08/89	
MW-1014	01/24/89		AS	SAC				02/08/89	
MW-1015	01/10/89			SAC	01/12/89				
MW-1016	01/11/89			SAC	01/13/89			01/23/89	
MW-1016	01/11/89		AS	SAC				01/23/89	
MW-1019	01/18/89			SAC	01/31/89			01/27/89	01/19/89
MW-1019	01/18/89		AS	SAC				01/27/89	
MW-1020	01/18/89			SAC	01/31/89			01/27/89	
MW-1020	01/18/89		AS	SAC				01/27/89	
MW-1021	01/19/89			SAC	01/23/89	01/23/89			
MW-1022	01/19/89	FDA		SAC	01/23/89				
MW-1022	01/19/89	FDB		SAC	01/23/89				
MW-1023	01/11/89			SAC	01/13/89				
MW-1024	01/10/89			SAC	01/12/89				
MW-1025	01/10/89			SAC	01/12/89				
MW-1037	01/11/89			SAC	01/13/89				
MW-1038	01/11/89			SAC	01/13/89				
MW-1039	01/11/89			SAC	01/17/89				
QC-1	01/11/89	TB		SAC	01/13/89				
QC-2	01/10/89	TB		SAC	01/12/89				
QC-3	01/20/89	TB		SAC	01/27/89				

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis
TB = Trip blank
SAC = Radian Analytical Services, Sacramento
MS = Matrix spike
MSD = Matrix spike duplicate
AS = Analytical spike

RADIAN CORPORATION

TABLE 1-9. (continued)

	U.S.EPA METHOD			SW8010	SW8020	SW8240	6010	7196
	MAXIMUM HOLDING TIME			14 DAYS	14 DAYS	14 DAYS	6 MONTHS	24 HOURS
WELL	DATE SAMPLED	FIELD ANALYSIS	LAB ANALYSIS	LAB	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED	DATE ANALYZED
QC-4	01/20/89	TB		SAC	01/27/89				
QC-5	01/25/89	TB		SAC	01/30/89				
QC-6	01/25/89	TB		SAC	01/30/89				
QC-10	01/25/89	EB		SAC	01/30/89				
QC-11	01/31/89	EB		SAC	02/03/89				
QC-14	01/26/89	EB		SAC	01/31/89				
QC-25D	01/24/89	EB		SAC	01/30/89				
QC-26D	01/23/89	EB		SAC	01/26/89				
QC-28D	01/24/89	AB		SAC	01/27/89				
QC-41S	01/16/89	AB		SAC	01/20/89				
QC-71	01/30/89	AB		SAC	01/31/89				
QC-84	01/10/89	AB		SAC	01/12/89	01/12/89			
QC-129	01/12/89	AB		SAC	01/20/89				
QC-1004	01/17/89	AB		SAC	01/20/89				
QC-1014	01/24/89	EB		SAC	01/30/89				
QC-1019	01/18/89	AB		SAC	01/31/89				
QC-1022	01/19/89	AB		SAC	01/27/89				

EB = Equipment blank
TB = Trip blank
SAC = Radian Analytical Services, Sacramento
AB = Ambient blank

Some analytical results in this report are flagged with "P" or "PC." This notation means that the compound was confirmed in previous quarters by a second-column confirmation run; therefore, a second-column confirmation was not performed. In addition, some data are flagged with "B." This indicates that the compound was found in the reagent blank the day the sample was analyzed.

1.2.2 Presentation of Analytical Data

This section presents the results of the chemical analyses for groundwater samples collected during January through March 1989. In the following tables, the analytical results are presented by areas and by analytical method. Tables 1-10 through 1-13 present the results for Area A and Adjacent On-Base Areas. Tables 1-14 through 1-16 present the results for the Southeast Area. Tables 1-17 through 1-20 present the results for Area B and Adjacent On-Base Areas. Tables 1-21 through 1-23 present the results for the Southwest Area. Tables 1-24 through 1-28 present the analytical results from wells located in Area C and Adjacent On-Base Areas. The analytical results from Area D and from the Northwest Area are presented in Tables 1-29 through 1-33 and Tables 1-34 through 1-36, respectively. Table 1-37 presents the results from Other On-Base Areas.

TABLE 1-10. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-25D	MW-25D	MW-26D	MW-71
Ground Water Zone			MIDDLE	MIDDLE	MIDDLE	MIDDLE
Date Sampled			01/24/89	01/24/89	01/23/89	01/30/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/30/89	01/30/89	01/26/89	01/31/89
Lab			SAC	SAC	SAC	SAC
Field Analysis			FDA	FDB		
Lab Analysis						
Chloromethane	NE	NE	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	1.0C	1.2P	0.40C	ND
Chloroform	100	100	0.31C	0.31P	1.3C	0.54P
1,2-Dichloroethane	1	5	0.19C	0.24P	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	0.24C	ND
Bromodichloromethane	100	100	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND
Trichloroethene	5	5	1.2C	1.1P	22C	0.59P
Dibromochloromethane	100	100	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-11. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-26D
Ground Water Zone			MIDDLE
Date Sampled			01/23/89
Sampled By			RADIAN
Date Analyzed			01/26/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chlorobenzene	30	NE	ND
1,3-Dichlorobenzene	130	NE	ND
1,2-Dichlorobenzene	130	NE	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND
Benzene	.7	5	ND
Ethylbenzene	680	NE	ND
Toluene	100	NE	ND
Total Xylenes	NE	NE	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
LOQ = Limit of quantitation
NE = Not established

TABLE 1-12. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-25D	MW-25D	MW-71
Ground Water Zone			MIDDLE	MIDDLE	MIDDLE
Date Sampled			01/24/89	01/24/89	01/30/89
Sampled By			RADIAN	RADIAN	RADIAN
Date Analyzed			02/08/89	02/08/89	02/16/89
Lab			SAC	SAC	SAC
Field Analysis			FDA	FDB	
Lab Analysis					
Antimony	NE	NE	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND
Chromium	NE	0.050	0.01	0.013	0.008
Copper	NE	NE	ND	ND	ND
Lead	NE	0.050	ND	ND	ND
Nickel	NE	NE	ND	ND	ND
Selenium	NE	0.010	ND	ND	ND
Silver	NE	0.050	ND	ND	ND
Thallium	NE	NE	ND	ND	ND
Zinc	NE	NE	0.050B	0.031B	0.045
Calcium	NE	NE	21	21	18B
Iron	NE	NE	0.032B	0.077B	0.18B
Magnesium	NE	NE	14	14	7.6
Sodium	NE	NE	19	19	14
Aluminum	NE	NE	ND	ND	ND
Boron	NE	NE	0.009	0.01	0.016
Barium	NE	1.0	0.055	0.055	0.038
Cobalt	NE	NE	ND	ND	ND
Potassium	NE	NE	ND	ND	ND
Manganese	NE	NE	0.014	0.01	0.029
Molybdenum	NE	NE	ND	ND	ND
Silicon	NE	NE	43	42	38
Vanadium	NE	NE	0.025	0.26	0.022

ALL UNITS ARE mg/l

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-13. MASTER LOG OF WELLS SAMPLED FOR METHOD 7196 FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-25D	MW-25D	MW-71
Ground Water Zone			MIDDLE	MIDDLE	MIDDLE
Date Sampled			01/24/89	01/24/89	01/30/89
Sampled By			RADIAN	RADIAN	RADIAN
Date Analyzed			01/25/89	01/25/89	01/31/89
Lab			SAC	SAC	SAC
Field Analysis			FDA	FDB	
Lab Analysis					
Chromium VI	NE	0.050	ND	0.03	ND

ALL UNITS ARE mg/l

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis
RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
ND = Nothing detected
NE = Not established

TABLE 1-14. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR THE SOUTHEAST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-28D	MW-1013	MW-1014	MW-1037	MW-1038	MW-1039
Ground Water Zone			MIDDLE	SHALLOW	SHALLOW	SHALLOW	MIDDLE	DEEP
Date Sampled			01/23/89	01/18/89	01/24/89	01/11/89	01/11/89	01/11/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/30/89	01/23/89	01/30/89	01/13/89	01/13/89	01/17/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								
Lab Analysis								
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	ND	ND	ND	ND	ND	ND
Chloroform	100	100	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l

MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento

SAC = Radian Analytical Services, Sacramento

ND = Nothing detected

LOQ = Limit of quantitation

NE = Not established

TABLE 1-15. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR THE SOUTHEAST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-28D	MW-1013	MW-1014
Ground Water Zone			MIDDLE	SHALLOW	SHALLOW
Date Sampled			01/23/89	01/18/89	01/24/89
Sampled By			RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	01/27/89	02/08/89
Lab			SAC	SAC	SAC
Field Analysis					
Lab Analysis					
Antimony	NE	NE	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND
Chromium	NE	0.050	ND	0.008	ND
Copper	NE	NE	ND	ND	ND
Lead	NE	0.050	ND	ND	ND
Nickel	NE	NE	0.018	0.12	0.34
Selenium	NE	0.010	ND	ND	ND
Silver	NE	0.050	ND	ND	ND
Thallium	NE	NE	ND	ND	ND
Zinc	NE	NE	0.19	0.007B	0.007B
Calcium	NE	NE	5.2B	20B	24
Iron	NE	NE	0.027B	0.10B	0.14B
Magnesium	NE	NE	3.4	13B	15
Sodium	NE	NE	4.6B	15B	16
Aluminum	NE	NE	ND	ND	ND
Boron	NE	NE	ND	0.009	0.009
Barium	NE	1.0	0.013	0.041	0.061
Cobalt	NE	NE	ND	ND	ND
Potassium	NE	NE	ND	ND	ND
Manganese	NE	NE	0.002	0.012	0.57
Molybdenum	NE	NE	ND	ND	ND
Silicon	NE	NE	16	38	39
Vanadium	NE	NE	0.010	0.02	ND

ALL UNITS ARE mg/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-16. MASTER LOG OF WELLS SAMPLED FOR METHOD 7196 FOR THE SOUTHEAST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-28D
Ground Water Zone			MIDDLE
Date Sampled			01/23/89
Sampled By			RADIAN
Date Analyzed			01/23/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chromium VI	NE	0.050	ND

ALL UNITS ARE mg/l

MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento

SAC = Radian Analytical Services, Sacramento

ND = Nothing detected

NE = Not established

TABLE 1-17. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-23D	MW-41S	MW-63	MW-63	MW-64	MW-120	MW-120	MW-121
Ground Water Zone			MIDDLE	SHALLOW	DEEP	DEEP	DEEP	SHALLOW	SHALLOW	MIDDLE
Date Sampled			01/09/89	01/16/89	01/19/89	01/19/89	01/24/89	01/10/89	01/10/89	01/13/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/12/89	01/24/89	01/30/89	01/30/89	01/30/89	01/17/89	01/17/89	01/19/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis					FDA	FDB		FDA	FDB	
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	ND	ND	29C	31C	ND	4.3C	4.3C	ND
Chloroform	100	100	ND	ND	0.74C	1.0C	ND	0.29C	0.31C	ND
1,2-Dichloroethane	1	5	ND	ND	0.56C	0.67C	ND	0.11C	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	3300C	55C	59C	ND	4.9C	5.1C	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	240C	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
NE = Not established

TABLE 1-17. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-122	MW-132
Ground Water Zone			DEEP	DEEP
Date Sampled			01/10/89	01/16/89
Sampled By			RADIAN	RADIAN
Date Analyzed			01/12/89	01/20/89
Lab			SAC	SAC
Field Analysis				
Lab Analysis				
Chloromethane	NE	NE	ND	ND
Bromomethane	NE	NE	ND	ND
Vinyl chloride	2	1	ND	ND
Chloroethane	NE	NE	ND	ND
Methylene chloride	40	NE	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND
1,1-Dichloroethene	6	7	ND	ND
1,1-Dichloroethane	20	NE	ND	ND
Total 1,2-Dichloroethene	16	NE	ND	25C
Chloroform	100	100	ND	0.86C
1,2-Dichloroethane	1	5	ND	0.63C
1,1,1-Trichloroethane	200	200	ND	ND
Carbon tetrachloride	5	5	ND	ND
Bromodichloromethane	100	100	ND	ND
1,2-Dichloropropane	10	NE	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND
Trichloroethene	5	5	ND	82C
Dibromochloromethane	100	100	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND
Bromoform	100	100	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND
Tetrachloroethene	4	NE	ND	ND
Chlorobenzene	30	NE	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
NE = Not established

TABLE 1-18. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-23D	MW-41S
Ground Water Zone			MIDDLE	SHALLOW
Date Sampled			01/09/89	01/16/89
Sampled By			RADIAN	RADIAN
Date Analyzed			01/12/89	01/24/89
Lab			SAC	SAC
Field Analysis				
Lab Analysis				
Chlorobenzene	30	NE	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND
Benzene	.7	5	ND	ND
Ethylbenzene	680	NE	ND	ND
Toluene	100	NE	ND	ND
Total Xylenes	NE	NE	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
LOQ = Limit of quantitation
NE = Not established

TABLE 1-19. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-41S	MW-120	MW-120	MW-121
Ground Water Zone			SHALLOW	SHALLOW	SHALLOW	MIDDLE
Date Sampled			01/16/89	01/10/89	01/10/89	01/13/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	01/23/89	01/23/89	01/23/89
Lab			SAC	SAC	SAC	SAC
Field Analysis				FDA	FDB	
Lab Analysis						
Antimony	NE	NE	ND	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND	ND
Chromium	NE	0.050	0.013	0.012	0.012	0.013
Copper	NE	NE	ND	0.007	0.010	0.010
Lead	NE	0.050	ND	ND	ND	ND
Nickel	NE	NE	ND	0.02	0.027	0.058
Selenium	NE	0.010	ND	ND	ND	ND
Silver	NE	0.050	ND	ND	ND	ND
Thallium	NE	NE	ND	ND	ND	ND
Zinc	NE	NE	0.029B	0.028B	0.070SB	0.006B
Calcium	NE	NE	16B	22	23	33
Iron	NE	NE	0.038B	0.98B	1.4B	0.045B
Magnesium	NE	NE	11	6.5	6.8	13
Sodium	NE	NE	16B	12	13	17
Aluminum	NE	NE	ND	0.67	0.94	0.053
Boron	NE	NE	0.013	ND	ND	0.170
Barium	NE	1.0	0.038	0.18S	0.230S	0.064
Cobalt	NE	NE	ND	ND	ND	ND
Potassium	NE	NE	ND	ND	ND	ND
Manganese	NE	NE	0.01	0.134S	0.192S	0.019
Molybdenum	NE	NE	ND	ND	ND	ND
Silicon	NE	NE	40B	26	27	30
Vanadium	NE	NE	0.026	0.009	0.011	0.014

ALL UNITS ARE mg/l

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
S = Determined by Method of Standard Addition

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-20. MASTER LOG OF WELLS SAMPLED FOR METHOD 7196 FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-41S
Ground Water Zone			SHALLOW
Date Sampled			01/16/89
Sampled By			RADIAN
Date Analyzed			01/17/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chromium VI	NE	0.050	ND

ALL UNITS ARE mg/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
NE = Not established

TABLE 1-21. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR THE SOUTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-1000	MW-1015	MW-1016	MW-1020	MW-1021	MW-1022	MW-1022	MW-1023
Ground Water Zone			MIDDLE	MIDDLE	SHALLOW	SHALLOW	SHALLOW	MIDDLE	MIDDLE	SHALLOW
Date Sampled			01/09/89	01/10/89	01/11/89	01/18/89	01/19/89	01/19/89	01/19/89	01/11/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/11/89	01/12/89	01/13/89	01/31/89	01/23/89	01/23/89	01/23/89	01/13/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								FDA	FDB	
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	0.93P	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	ND	ND	ND	0.13C	0.94C	1.6C	1.4C	ND
Chloroform	100	100	ND	ND	ND	ND	0 17C	0.21C	0.16C	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	ND	ND	0.32C	15C	9.1C	10C	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	1.4C	0.81C	0.80C	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-21. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-1024	MW-1025
Ground Water Zone			MIDDLE	DEEP
Date Sampled			01/10/89	01/10/89
Sampled By			RADIAN	RADIAN
Date Analyzed			01/12/89	01/12/89
Lab			SAC	SAC
Field Analysis				
Lab Analysis				
Chloromethane	NE	NE	ND	ND
Bromomethane	NE	NE	ND	ND
Vinyl chloride	2	1	ND	ND
Chloroethane	NE	NE	ND	ND
Methylene chloride	40	NE	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND
1,1-Dichloroethene	6	7	ND	ND
1,1-Dichloroethane	20	NE	ND	ND
Total 1,2-Dichloroethene	16	NE	ND	ND
Chloroform	100	100	ND	ND
1,2-Dichloroethane	1	5	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND
Carbon tetrachloride	5	5	ND	ND
Bromodichloromethane	100	100	ND	ND
1,2-Dichloropropane	10	NE	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND
Trichloroethene	5	5	ND	ND
Dibromochloromethane	100	100	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND
Bromoform	100	100	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND
Tetrachloroethene	4	NE	ND	ND
Chlorobenzene	30	NE	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND

ALL UNITS ARE ug/l

MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento

SAC = Radian Analytical Services, Sacramento

ND = Nothing detected

LOQ = Limit of quantitation

NE = Not established

TABLE 1-22. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR THE SOUTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-1021
Ground Water Zone			SHALLOW
Date Sampled			01/19/89
Sampled By			RADIAN
Date Analyzed			01/23/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chlorobenzene	30	NE	ND
1,3-Dichlorobenzene	130	NE	ND
1,2-Dichlorobenzene	130	NE	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND
Benzene	.7	5	ND
Ethylbenzene	680	NE	ND
Toluene	100	NE	ND
Total Xylenes	NE	NE	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
LOQ = Limit of quantitation
NE = Not established

TABLE 1-23. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR THE SOUTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-1016	MW-1020
Ground Water Zone			SHALLOW	SHALLOW
Date Sampled			01/11/89	01/18/89
Sampled By			RADIAN	RADIAN
Date Analyzed			01/23/89	01/27/89
Lab			SAC	SAC
Field Analysis				
Lab Analysis				
Antimony	NE	NE	ND	ND
Arsenic	NE	0.050	ND	ND
Beryllium	NE	NE	ND	ND
Cadmium	NE	0.010	ND	ND
Chromium	NE	0.050	ND	0.017
Copper	NE	NE	0.038	ND
Lead	NE	0.050	ND	ND
Nickel	NE	NE	0.021	0.019
Selenium	NE	0.010	ND	ND
Silver	NE	0.050	ND	ND
Thallium	NE	NE	ND	ND
Zinc	NE	NE	0.011B	0.008B
Calcium	NE	NE	25	21B
Iron	NE	NE	0.047B	0.027B
Magnesium	NE	NE	8.1	6.4B
Sodium	NE	NE	31	17B
Aluminum	NE	NE	ND	ND
Boron	NE	NE	0.058	0.018
Barium	NE	1.0	0.039	0.037
Cobalt	NE	NE	ND	ND
Potassium	NE	NE	8.9	ND
Manganese	NE	NE	0.085	0.005
Molybdenum	NE	NE	ND	ND
Silicon	NE	NE	26	37
Vanadium	NE	NE	0.019	0.023

ALL UNITS ARE mg/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-24. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-137	EW-137	EW-137	EW-140	EW-140	EW-140	EW-141	EW-141
Ground Water Zone			DEEP	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP
Date Sampled			01/12/89	02/02/89	03/01/89	01/12/89	02/02/89	03/01/89	01/12/89	02/02/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	02/03/89	03/03/89	01/17/89	02/03/89	03/03/89	01/17/89	02/03/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	9.0C	21C	ND	ND	4.6C	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	5.4C	5.2C	11P	3.6C	3.7C	3.0C	6.7C	6.2C
Total 1,2-Dichloroethene	16	NE	13C	12C	14P	28C	30C	25C	26C	20C
Chloroform	100	100	ND	ND	ND	ND	0.68C	0.68C	ND	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	ND	ND	3.8C
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	490C	480C	310P	140C	160C	93C	230C	210C
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND	ND	1.9C
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

TABLE 1-24. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-141	EW-144	EW-144	EW-144	MW-20D	MW-21D	MW-21S	MW-22D
Ground Water Zone			DEEP				MIDDLE	MIDDLE	SHALLOW	DEEP
Date Sampled			03/01/89	01/18/89	02/02/89	03/01/89	01/23/89	01/23/89	01/24/89	01/12/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			03/03/89	01/23/89	02/03/89	03/03/89	01/27/89	01/27/89	01/30/89	01/20/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	15C	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	7.4P	ND	1.9C	ND	ND	ND	0.34C	ND
Total 1,2-Dichloroethene	16	NE	15P	10C	11C	9.6C	ND	ND	2.2C	ND
Chloroform	100	100	ND	ND	ND	ND	ND	ND	0.11C	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	120P	310C	340C	240C	ND	ND	1.5C	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-24. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-33S	MW-44S	MW-60	MW-61	MW-62	MW-75	MW-114	MW-115
Ground Water Zone			SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	MIDDLE	SHALLOW	MIDDLE
Date Sampled			01/11/89	01/18/89	01/13/89	01/20/89	01/11/89	01/25/89	01/20/89	01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	01/31/89	01/19/89	01/27/89	01/13/89	01/30/89	01/27/89	01/20/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	1100U	ND	0.49U	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	4.7P	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	580P	ND	ND	ND	0.2C	1.1C	0.25P	ND
Chloroform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	200P	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	0.23C	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	17000P	1.1P	ND	12C	0.46C	12C	ND	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	0.12C	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	0.38C	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
U = Unconfirmed, second column not requested

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-24. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-128	MW-129	MW-129	MW-130	MW-131	MW-133	MW-133	MW-134
Ground Water Zone			SHALLOW	MIDDLE	MIDDLE	DEEP	SHALLOW	DEEP	DEEP	DEEP
Date Sampled			01/12/89	01/12/89	01/12/89	01/12/89	01/12/89	01/19/89	01/19/89	01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	01/23/89	01/20/89	01/19/89	01/19/89	01/23/89	01/23/89	01/20/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis				FDA	FDB			FDA	FDB	
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	800C	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	2.8P	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	5.8P	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	190C	1.6C	1.0C	1.1P	19P	ND	ND	0.39C
Chloroform	100	100	ND	ND	ND	0.40P	2.0P	ND	ND	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	0.82P	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	2.3C	ND	0.78P	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	17000C	170C	140C	2.7P	90P	ND	ND	2.9C
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	NDA	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-24. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-135	MW-136	MW-138	MW-138	MW-139	MW-142	MW-143
Ground Water Zone			MIDDLE	DEEP	DEEP	DEEP	SHALLOW	DEEP	DEEP
Date Sampled			01/16/89	01/26/89	01/12/89	01/12/89	01/16/89	01/18/89	01/18/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/20/89	01/31/89	01/20/89	01/20/89	01/20/89	01/23/89	02/01/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis					FDA	FDB			
Lab Analysis									
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	ND	ND	0.76U	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	20	NE	ND	7.2C	ND	ND	14C	ND	ND
Total 1,2-Dichloroethene	16	NE	5.0C	6.2C	ND	ND	26C	ND	ND
Chloroform	100	100	0.71C	ND	ND	ND	1.1C	ND	ND
1,2-Dichloroethane	1	5	0.30C	ND	ND	ND	1.1C	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	2.2C	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	25C	230C	ND	ND	95C	ND	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
U = Unconfirmed, second column not requested

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
NE = Not established

TABLE 1-25. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-137	EW-137	EW-137	EW-140	EW-140	EW-140	EW-141	EW-141
Ground Water Zone			DEEP	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP
Date Sampled			01/12/89	02/02/89	03/01/89	01/12/89	02/02/89	03/01/89	01/12/89	02/02/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	02/03/89	03/03/89	01/17/89	02/03/89	03/03/89	01/17/89	02/03/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	.7	5	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	680	NE	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	100	NE	ND	ND	ND	3.6C	ND	ND	ND	ND
Total Xylenes	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = *Radian Analytical Services, Sacramento*

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
NE = Not established

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

TABLE 1-25. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-141	EW-144	EW-144	EW-144	MW-33S	MW-75	MW-128
Ground Water Zone			DEEP				SHALLOW	MIDDLE	SHALLOW
Date Sampled			03/01/89	01/18/89	02/02/89	03/01/89	01/11/89	01/25/89	01/12/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			03/03/89	01/23/89	02/03/89	03/03/89	01/17/89	01/30/89	01/17/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis									
Lab Analysis									
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND
Benzene	.7	5	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	680	NE	ND	ND	ND	ND	ND	ND	ND
Toluene	100	NE	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	NE	NE	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
LOQ = Limit of quantitation
NE = Not established

TABLE 1-26. MASTER LOG OF WELLS SAMPLED FOR METHOD 8240 COMPOUNDS FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-144
Ground Water Zone			
Date Sampled			01/18/89
Sampled By			RADIAN
Date Analyzed			01/24/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chloromethane	NE	NE	ND
Bromomethane	NE	NE	ND
Vinyl chloride	2	1	ND
Chloroethane	NE	NE	ND
Methylene chloride	40	NE	3.1
Trichlorofluoromethane	3400	NE	NA
1,1-Dichloroethene	6	7	ND
1,1-Dichloroethane	20	NE	ND
Total 1,2-Dichloroethene	16	NE	12
Chloroform	100	100	ND
1,2-Dichloroethane	1	5	ND
1,1,1-Trichloroethane	200	200	ND
Carbon tetrachloride	5	5	ND
Bromodichloromethane	100	100	ND
1,2-Dichloropropane	10	NE	ND
Trans-1,3-dichloropropene	NE	NE	ND
Trichloroethene	5	5	360
Dibromochloromethane	100	100	ND
1,1,2-Trichloroethane	100	NE	ND
cis-1,3-Dichloropropene	87	NE	ND
2-Chloroethylvinyl ether	NE	NE	ND
Bromoform	100	100	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND
Tetrachloroethene	4	NE	ND
Chlorobenzene	30	NE	ND
Benzene	.7	5	ND
Ethylbenzene	680	NE	ND
Toluene	100	NE	ND
Acetone	NE	NE	ND
Carbon disulfide	NE	NE	ND
2-Butanone	NE	NE	ND
Vinyl acetate	NE	NE	ND
2-Hexanone	NE	NE	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
NA = Not analyzed
NE = Not established

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

TABLE 1-26. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-144
Ground Water Zone			
Date Sampled			01/18/89
Sampled By			RADIAN
Date Analyzed			01/24/89
Lab			SAC
Field Analysis			
Lab Analysis			
4-Methyl-2-pentanone	NE	NE	ND
Styrene	NE	NE	ND
Total Xylenes	NE	NE	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
NE = Not established

TABLE 1-27. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-137	EW-140	EW-141	EW-144	MW-20D	MW-21D	MW-21S	MW-22D
Ground Water Zone			DEEP	DEEP	DEEP	DEEP	MIDDLE	MIDDLE	SHALLOW	DEEP
Date Sampled			01/12/89	01/12/89	01/12/89	01/18/89	01/23/89	01/23/89	01/24/89	01/12/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/25/89	01/25/89	01/25/89	01/27/89	02/03/89	02/03/89	02/08/89	01/25/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Antimony	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	NE	0.050	0.014	0.015	0.018	0.015	0.014	0.015	ND	0.015
Copper	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Lead	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	NE	NE	ND	ND	ND	ND	ND	0.030	2.2	ND
Selenium	NE	0.010	ND	ND	ND	ND	ND	ND	ND	ND
Silver	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	NE	NE	0.013B	0.004B	0.005B	0.005B	0.017	0.012	0.025B	0.004B
Calcium	NE	NE	36	27	33	25B	16B	15B	11	16
Iron	NE	NE	0.018B	0.019B	0.022B	0.020B	0.041B	0.053B	4.7B	0.012B
Magnesium	NE	NE	28	21	26	18B	12	11	6.2	12
Sodium	NE	NE	23	19	22	18B	15B	16B	13	14
Aluminum	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Boron	NE	NE	0.053	0.046	0.054	0.030	0.24	0.037	0.014	0.022
Barium	NE	1.0	0.15	0.10	0.12	0.098	0.061	0.049	0.047	0.057
Cobalt	NE	NE	ND	ND	ND	ND	ND	ND	0.041	ND
Potassium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	NE	NE	ND	ND	ND	ND	0.007	0.004	0.61	ND
Molybdenum	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Silicon	NE	NE	41	41	41	42	41	39	34	42
Vanadium	NE	NE	0.023	0.023	0.020	0.028	0.081	0.032	ND	0.031

ALL UNITS ARE mg/l
MW = Monitoring Well
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

TABLE 1-27. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-33S	MW-44S	MW-60	MW-61	MW-62	MW-75	MW-115	MW-128
Ground Water Zone			SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	MIDDLE	MIDDLE	SHALLOW
Date Sampled			01/11/89	01/18/89	01/13/89	01/20/89	01/11/89	01/25/89	01/16/89	01/12/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/23/89	01/27/89	01/23/89	02/03/89	01/23/89	02/08/89	02/03/89	01/25/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Antimony	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	NE	0.050	ND	0.055	ND	0.008	ND	ND	0.015	ND
Copper	NE	NE	ND	ND	ND	ND	ND	ND	0.011	ND
Lead	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	NE	NE	ND	0.12	ND	ND	ND	ND	ND	0.17
Selenium	NE	0.010	ND	ND	ND	ND	ND	ND	ND	ND
Silver	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	NE	NE	0.016B	0.016B	0.003B	0.011B	0.007B	0.006B	0.034B	0.003B
Calcium	NE	NE	71	20B	11	12B	26	16	15B	42
Iron	NE	NE	0.026B	0.30B	1.3B	0.15B	0.41B	0.086B	0.019B	0.35B
Magnesium	NE	NE	48	13B	8.0	8.9	11	11	12	30
Sodium	NE	NE	34	17B	15	14B	21	15	15B	26
Aluminum	NE	NE	ND	ND	ND	ND	0.086	ND	ND	ND
Boron	NE	NE	0.019	0.020	0.008	0.014	0.027	0.020	0.028	0.015
Barium	NE	1.0	0.19	0.049	0.025	0.022	0.051	0.057	0.11	0.11
Cobalt	NE	NE	0.007	ND	ND	ND	ND	ND	ND	0.010
Potassium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	NE	NE	0.33	0.033	0.077	0.023	0.053	0.10	ND	0.029
Molybdenum	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Silicon	NE	NE	43	41	34	37B	29	39	40B	40
Vanadium	NE	NE	0.018	0.024	0.012	0.021	0.012	0.025	0.035	0.021

ALL UNITS ARE mg/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-27. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-129	MW-129	MW-130	MW-131	MW-133	MW-133	MW-134	MW-135
Ground Water Zone			MIDDLE	MIDDLE	DEEP	SHALLOW	SHALLOW	SHALLOW	DEEP	MIDDLE
Date Sampled			01/12/89	01/12/89	01/12/89	01/12/89	01/19/89	01/19/89	01/16/89	01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/25/89	01/25/89	01/25/89	01/25/89	02/02/89	02/02/89	02/03/89	02/03/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis			FDA	FDB			FDA	FDB		
Lab Analysis										
Antimony	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	NE	0.050	0.015	0.016	0.011	0.014	0.009	0.008	0.011	0.012
Copper	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Lead	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	NE	NE	ND	ND	0.018	0.030	ND	ND	ND	ND
Selenium	NE	0.010	ND	ND	ND	ND	ND	ND	ND	ND
Silver	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	NE	NE	0.003B	0.003B	0.044B	0.012B	0.006	0.012	0.12B	0.039B
Calcium	NE	NE	14	14	28	17	23B	24B	18B	21B
Iron	NE	NE	0.012B	0.009B	0.040B	0.015B	0.014	0.049	0.039B	0.016B
Magnesium	NE	NE	11	11	22	12	12	12	12	7.2
Sodium	NE	NE	15	15	19	17	18B	19B	18B	16B
Aluminum	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Boron	NE	NE	0.021	0.018	0.042	0.014	0.073	0.074	0.048	0.028
Barium	NE	1.0	0.039	0.040	0.12	0.047	0.048	0.049	0.048	0.049
Cobalt	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	NE	NE	ND	ND	0.003	0.002	0.007	0.007	ND	ND
Molybdenum	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Silicon	NE	NE	40	40	40	40	40	40	40B	38B
Vanadium	NE	NE	0.030	0.030	0.026	0.027	0.023	0.023	0.023	0.031

ALL UNITS ARE mg/l

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-27. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-136	MW-138	MW-138	MW-139	MW-142	MW-143
Ground Water Zone			MIDDLE	MIDDLE	MIDDLE	SHALLOW	DEEP	DEEP
Date Sampled			01/26/89	01/12/89	01/12/89	01/16/89	01/18/89	01/18/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/16/89	01/25/89	01/25/89	02/03/89	01/27/89	01/27/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis				FDA	FDB			
Lab Analysis								
Antimony	NE	NE	ND	ND	ND	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND	0.034	ND	ND
Cadmium	NE	0.010	ND	ND	ND	0.033	ND	ND
Chromium	NE	0.050	ND	0.009	0.010	0.043	0.015	0.014
Copper	NE	NE	0.007	ND	ND	0.040	ND	ND
Lead	NE	0.050	ND	ND	ND	ND	ND	ND
Nickel	NE	NE	0.047	ND	ND	0.21	ND	ND
Selenium	NE	0.010	ND	ND	ND	ND	ND	ND
Silver	NE	0.050	ND	ND	ND	0.027	ND	ND
Thallium	NE	NE	ND	ND	ND	0.054	ND	ND
Zinc	NE	NE	0.024B	0.007B	0.004B	0.068B	0.007B	0.014B
Calcium	NE	NE	40B	20	20	49B	18B	19B
Iron	NE	NE	0.011B	0.011B	ND	0.16B	0.024B	0.025B
Magnesium	NE	NE	27	10	10	36	11B	13B
Sodium	NE	NE	42	18	18	28B	15B	16B
Aluminum	NE	NE	ND	ND	ND	ND	ND	ND
Boron	NE	NE	0.066	0.035	0.034	0.060	0.027	0.025
Barium	NE	1.0	0.098	0.043	0.043	0.15	0.039	0.070
Cobalt	NE	NE	ND	ND	ND	0.035	ND	ND
Potassium	NE	NE	ND	ND	ND	ND	ND	ND
Manganese	NE	NE	0.003	ND	ND	0.089	0.002	0.003
Molybdenum	NE	NE	ND	ND	ND	ND	ND	ND
Silicon	NE	NE	35	39	39	39B	43	45
Vanadium	NE	NE	0.015	0.026	0.026	0.049	0.032	0.034

ALL UNITS ARE mg/l
MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-28. MASTER LOG OF WELLS SAMPLED FOR METHOD 7196 FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-137	EW-140	EW-141	EW-144	MW-20D	MW-21D	MW-21S	MW-22D
Ground Water Zone			DEEP	DEEP	DEEP		MIDDLE	MIDDLE	SHALLOW	DEEP
Date Sampled			01/12/89	01/12/89	01/12/89	01/18/89	01/23/89	01/23/89	01/24/89	01/12/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/13/89	01/13/89	01/13/89	01/19/89	01/23/89	01/23/89	01/25/89	01/13/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chromium VI	NE	0.050	0.02	ND	0.02	ND	ND	ND	0.04	0.02

ALL UNITS ARE mg/l

MW = Monitoring Well
EW = Extraction Well
RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
ND = Nothing detected
NE = Not established

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

TABLE 1-28. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-33S	MW-44S	MW-115	MW-130	MW-133	MW-133	MW-134	MW-135
Ground Water Zone			SHALLOW	SHALLOW	MIDDLE	DEEP	DEEP	DEEP	DEEP	MIDDLE
Date Sampled			01/11/89	01/18/89	01/16/89	01/12/89	01/19/89	01/19/89	01/16/89	01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/12/89	01/19/89	01/17/89	01/13/89	01/20/89	01/20/89	01/17/89	01/17/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis							FDA	FDB		
Lab Analysis										
Chromium VI	NE	0.050	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE mg/l

MW = Monitoring Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
NE = Not established

TABLE 1-28. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-139	MW-142	MW-143
Ground Water Zone			SHALLOW	DEEP	DEEP
Date Sampled			01/16/89	01/18/89	01/18/89
Sampled By			RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	01/19/89	01/19/89
Lab			SAC	SAC	SAC
Field Analysis					
Lab Analysis					
Chromium VI	NE	0.050	ND	ND	ND

ALL UNITS ARE mg/l

MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento

SAC = Radian Analytical Services, Sacramento

ND = Nothing detected

NE = Not established

TABLE 1-29. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-73	EW-73	EW-83	EW-83	EW-83	EW-84	EW-84	EW-84
Ground Water Zone										
Date Sampled			02/01/89	03/01/89	01/04/89	02/02/89	03/01/89	01/10/89	01/10/89	02/02/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	03/03/89	01/11/89	02/03/89	03/03/89	01/12/89	01/12/89	02/03/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								FDA	FDB	
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	1500P	1000P	ND	ND	ND	410P	620P	440C
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	1300P	ND	ND	150C	ND	40P	ND	56C
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	7000P	5400P	390P	650C	410P	1200P	2000P	1300C
1,1-Dichloroethane	20	NE	800P	930P	ND	ND	ND	240P	370P	207C
Total 1,2-Dichloroethene	16	NE	730P	740P	ND	ND	ND	230P	210P	220C
Chloroform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	65P	56P	120C
1,1,1-Trichloroethane	200	200	790P	930P	25P	ND	18P	140P	210P	130C
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	1100P	690P	41P	ND	42P	980P	1600P	1200C
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	3.1P	7.8C	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	36C
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
EW = Extraction Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-29. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-84	EW-85	EW-85	EW-85	EW-86	EW-86	EW-86	EW-87
Ground Water Zone										
Date Sampled			03/01/89	01/04/89	02/02/89	03/01/89	01/04/89	02/02/89	03/01/89	01/05/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			03/03/89	01/11/89	02/03/89	03/03/89	01/11/89	02/03/89	03/03/89	01/11/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	350C	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	92P	ND	ND	7.6P	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	860C	600C	880P	550P	100P	74P	56P	100P
1,1-Dichloroethane	20	NE	180C	ND	ND	26P	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	190C	11C	ND	14P	ND	ND	ND	2.3P
Chloroform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	110C	13C	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	110C	120C	130P	76P	38P	34P	21P	8.2P
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	720C	400C	660P	330P	42P	40P	25P	39P
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	41C	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-29. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-87	EW-87	MW-10	MW-11	MW-12	MW-14	MW-15	MW-51
Ground Water Zone					SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	DEEP
Date Sampled			02/02/89	03/01/89	01/25/89	01/31/89	01/25/89	01/26/89	01/25/89	01/06/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	03/03/89	01/30/89	02/02/89	01/30/89	01/31/89	01/30/89	01/11/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	73C	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	140C	100C	840C	19000C	2600P	4600C	580C	ND
1,1-Dichloroethane	20	NE	1.5C	1.3C	110C	270C	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	3.3C	2.9C	130C	190C	ND	ND	ND	ND
Chloroform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	ND	ND	250C	ND	ND	34C	ND	ND
1,1,1-Trichloroethane	200	200	11C	7.6C	ND	5600C	360P	2300C	170C	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	58C	36C	1300C	2900C	590P	4100C	340C	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	0.54C	ND	ND	ND	38P	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	140C	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-29. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-52	MW-54	MW-55	MW-57	MW-58	MW-59	MW-70	MW-72
Ground Water Zone			MIDDLE	MIDDLE	MIDDLE	MIDDLE	DEEP	DEEP	MIDDLE	MIDDLE
Date Sampled			01/18/89	01/17/89	01/06/89	01/09/89	01/09/89	01/05/89	01/05/89	01/06/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/31/89	01/20/89	01/11/89	01/11/89	01/11/89	01/11/89	01/11/89	01/11/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	0.51U	1.0U	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	ND	4.1P	ND	0.11P	0.11P	0.11P	370P
1,1-Dichloroethane	20	NE	ND	0.45C	0.81P	ND	ND	ND	ND	49P
Total 1,2-Dichloroethene	16	NE	ND	ND	0.72P	ND	ND	ND	ND	34P
Chloroform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	ND	ND	130P
1,1,1-Trichloroethane	200	200	ND	ND	3.9P	ND	0.33P	ND	ND	12P
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	ND	1.4P	ND	ND	ND	ND	550P
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	1.4P	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	17P
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
U = Unconfirmed, second column not requested

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-29. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-88	MW-89	MW-90	MW-91	MW-92	MW-104	MW-105
Ground Water Zone			SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	DEEP	DEEP
Date Sampled			01/17/89	01/16/89	01/16/89	01/13/89	01/17/89	01/20/89	01/17/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/20/89	01/20/89	01/20/89	01/19/89	01/20/89	01/27/89	01/20/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis									
Lab Analysis									
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	0.52C	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	6.2C	ND	3.2C	ND	ND	ND
1,1-Lichloroethane	20	NE	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	16	NE	ND	ND	ND	0.14C	0.55P	ND	ND
Chloroform	100	100	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1	5	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	ND	ND	4.9C	2.7P	ND	ND
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-30. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-73	EW-73	EW-84	EW-84	MW-10	MW-11	MW-12	MW-14
Ground Water Zone							SHALLOW	SHALLOW	SHALLOW	SHALLOW
Date Sampled			02/01/89	03/01/89	01/10/89	01/10/89	01/25/89	01/31/89	01/25/89	01/26/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	03/06/89	01/12/89	01/12/89	01/30/89	02/02/89	01/30/89	01/31/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis					FDA	FDB				
Lab Analysis										
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	140P	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	.7	5	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	680	NE	ND	5.6C	ND	ND	ND	ND	ND	ND
Toluene	100	NE	ND	220C	ND	ND	ND	ND	ND	ND
Total Xylenes	NE	NE	ND	25C	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well
EW = Extraction Well
FDA = First field duplicate analysis
FDB = Second field duplicate analysis

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-30. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-15	MW-57	MW-58	MW-89	MW-91
Ground Water Zone			SHALLOW	MIDDLE	DEEP	SHALLOW	SHALLOW
Date Sampled			01/25/89	01/09/89	01/09/89	01/16/89	01/13/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/30/89	01/11/89	01/11/89	01/20/89	01/19/89
Lab			SAC	SAC	SAC	SAC	SAC
Field Analysis							
Lab Analysis							
Chlorobenzene	30	NE	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND
Benzene	.7	5	ND	ND	ND	ND	ND
Ethylbenzene	680	NE	ND	ND	ND	ND	ND
Toluene	100	NE	ND	ND	ND	ND	ND
Total Xylenes	NE	NE	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l

MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
LOQ = Limit of quantitation
NE = Not established

TABLE 1-31. MASTER LOG OF WELLS SAMPLED FOR METHOD 8240 COMPOUNDS FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-73
Ground Water Zone			
Date Sampled			01/05/89
Sampled By			RADIAN
Date Analyzed			01/14/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chloromethane	NE	NE	ND
Bromomethane	NE	NE	ND
Vinyl chloride	2	1	2100
Chloroethane	NE	NE	ND
Methylene chloride	40	NE	ND
Trichlorofluoromethane	3400	NE	NA
1,1-Dichloroethene	6	7	9900
1,1-Dichloroethane	20	NE	800
Total 1,2-Dichloroethene	16	NE	1100
Chloroform	100	100	ND
1,2-Dichloroethane	1	5	ND
1,1,1-Trichloroethane	200	200	810
Carbon tetrachloride	5	5	ND
Bromodichloromethane	100	100	ND
1,2-Dichloropropane	10	NE	ND
Trans-1,3-dichloropropene	NE	NE	ND
Trichloroethene	5	5	1300
Dibromochloromethane	100	100	ND
1,1,2-Trichloroethane	100	NE	ND
cis-1,3-Dichloropropene	87	NE	ND
2-Chloroethylvinyl ether	NE	NE	ND
Bromoform	100	100	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND
Tetrachloroethene	4	NE	ND
Chlorobenzene	30	NE	ND
Benzene	.7	5	ND
Ethylbenzene	680	NE	ND
Toluene	100	NE	ND
Acetone	NE	NE	16000B
Carbon disulfide	NE	NE	ND
2-Butanone	NE	NE	2800
Vinyl acetate	NE	NE	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
NA = Not analyzed
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-31. (continued)

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-73
Ground Water Zone			
Date Sampled			01/05/89
Sampled By			RADIAN
Date Analyzed			01/14/89
Lab			SAC
Field Analysis			
Lab Analysis			
2-Hexanone	NE	NE	ND
4-Methyl-2-pentanone	NE	NE	ND
Styrene	NE	NE	ND
Total Xylenes	NE	NE	ND

ALL UNITS ARE ug/l
EW = Extraction Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
NE = Not established

TABLE 1-32. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-12	MW-90	MW-91	MW-105
Ground Water Zone			SHALLOW	SHALLOW	SHALLOW	DEEP
Date Sampled			01/25/89	01/16/89	01/13/89	01/17/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/08/89	02/03/89	01/23/89	02/06/89
Lab			SAC	SAC	SAC	SAC
Field Analysis						
Lab Analysis						
Antimony	NE	NE	ND	ND	ND	ND
Arsenic	NE	0.050	ND	ND	ND	ND
Beryllium	NE	NE	ND	ND	ND	ND
Cadmium	NE	0.010	ND	ND	ND	ND
Chromium	NE	0.050	0.011	ND	0.008	0.012
Copper	NE	NE	ND	ND	ND	ND
Lead	NE	0.050	ND	ND	ND	ND
Nickel	NE	NE	ND	ND	ND	ND
Selenium	NE	0.010	ND	ND	ND	ND
Silver	NE	0.050	ND	0.01	ND	ND
Thallium	NE	NE	ND	ND	ND	ND
Zinc	NE	NE	0.008B	0.11B	0.006B	0.016B
Calcium	NE	NE	18	9.2B	15	16B
Iron	NE	NE	0.030B	2.2B	0.14B	0.047B
Magnesium	NE	NE	12	6.7	10	11
Sodium	NE	NE	19	14B	18	21B
Aluminum	NE	NE	ND	ND	ND	ND
Boron	NE	NE	0.028	0.014	0.017	0.081
Barium	NE	1.0	0.046	0.017	0.034	0.045
Cobalt	NE	NE	ND	ND	ND	ND
Potassium	NE	NE	ND	ND	ND	ND
Manganese	NE	NE	0.003	0.088	0.013	ND
Molybdenum	NE	NE	ND	ND	ND	ND
Silicon	NE	NE	42	35B	40	39B
Vanadium	NE	NE	0.031	0.015	0.026	0.038

ALL UNITS ARE mg/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-33. MASTER LOG OF WELLS SAMPLED FOR METHOD 7196 FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER EW-87	MW-12	MW-105
Ground Water Zone				SHALLOW	DEEP
Date Sampled			01/05/89	01/25/89	01/17/89
Sampled By			RADIAN	RADIAN	RADIAN
Date Analyzed			01/06/89	01/26/89	01/18/89
Lab			SAC	SAC	SAC
Field Analysis					
Lab Analysis					
Chromium VI	NE	0.050	ND	ND	ND

ALL UNITS ARE mg/l

MW = Monitoring Well
EW = Extraction Well
RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento
ND = Nothing detected
NE = Not established

TABLE 1-34. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR THE NORTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-1001	MW-1002	MW-1003	MW-1004	MW-1005	MW-1019
Ground Water Zone			DEEP	SHALLOW	MIDDLE	SHALLOW	SHALLOW	SHALLOW
Date Sampled			01/17/89	01/13/89	01/17/89	01/17/89	01/13/89	01/18/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/20/89	01/19/89	01/20/89	01/23/89	01/20/89	01/31/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								
Lab Analysis								
Chloromethane	NE	NE	ND	ND	ND	ND	ND	ND
Bromomethane	NE	NE	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	1	ND	ND	ND	ND	ND	ND
Chloroethane	NE	NE	ND	ND	ND	ND	ND	ND
Methylene chloride	40	NE	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	3400	NE	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	7	ND	0.49C	ND	7.0P	20C	ND
1,1-Dichloroethane	20	NE	ND	ND	ND	1.0P	1.7C	1.6C
Total 1,2-Dichloroethene	16	NE	ND	ND	ND	0.34P	1.3C	0.37C
Chloroform	100	100	ND	ND	ND	ND	ND	0.12C
1,2-Dichloroethane	1	5	ND	ND	ND	0.22P	0.61C	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	0.26C	ND
Carbon tetrachloride	5	5	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100	100	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	NE	ND	ND	ND	ND	ND	ND
Trans-1,3-dichloropropene	NE	NE	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	0.36C	ND	1.3P	5.2C	1.2C
Dibromochloromethane	100	100	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100	NE	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	87	NE	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	NE	NE	ND	ND	ND	ND	ND	ND
Bromoform	100	100	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4	NE	ND	ND	ND	ND	ND	0.50C
Chlorobenzene	30	NE	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	130	NE	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	ND	ND	ND	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
P or PC = Identity previously confirmed
NE = Not established

TABLE 1-35. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR THE NORTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S. EPA Primary MCL	WELL NUMBER MW-1004	MW-1019
Ground Water Zone			SHALLOW	SHALLOW
Date Sampled			01/17/89	01/18/89
Sampled By			RADIAN	RADIAN
Date Analyzed			02/06/89	01/27/89
Lab			SAC	SAC
Field Analysis				
Lab Analysis				
Antimony	NE	NE	ND	ND
Arsenic	NE	0.050	ND	ND
Beryllium	NE	NE	ND	ND
Cadmium	NE	0.010	ND	ND
Chromium	NE	0.050	0.013	0.008
Copper	NE	NE	ND	ND
Lead	NE	0.050	ND	ND
Nickel	NE	NE	0.023	ND
Selenium	NE	0.010	ND	ND
Silver	NE	0.050	ND	ND
Thallium	NE	NE	ND	ND
Zinc	NE	NE	0.035B	0.006B
Calcium	NE	NE	13B	38B
Iron	NE	NE	0.029B	0.021B
Magnesium	NE	NE	8.8	26B
Sodium	NE	NE	18B	30B
Aluminum	NE	NE	ND	ND
Boron	NE	NE	0.031	0.055
Barium	NE	1.0	0.034	0.11
Cobalt	NE	NE	ND	ND
Potassium	NE	NE	ND	ND
Manganese	NE	NE	ND	ND
Molybdenum	NE	NE	ND	ND
Silicon	NE	NE	38B	39
Vanadium	NE	NE	0.029	0.023

ALL UNITS ARE mg/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
B = Compound detected in laboratory blank - not edited
NE = Not established

TABLE 1-36. MASTER LOG OF WELLS SAMPLED FOR METHOD 7196 FOR THE NORTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-1019
Ground Water Zone			SHALLOW
Date Sampled			01/18/89
Sampled By			RADIAN
Date Analyzed			01/19/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chromium VI	NE	0.050	ND

ALL UNITS ARE mg/l

MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento

SAC = Radian Analytical Services, Sacramento

ND = Nothing detected

NE = Not established

TABLE 1-37. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR OTHER ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER MW-24D
Ground Water Zone			MIDDLE
Date Sampled			01/13/89
Sampled By			RADIAN
Date Analyzed			01/19/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chloromethane	NE	NE	ND
Bromomethane	NE	NE	ND
Vinyl chloride	2	1	ND
Chloroethane	NE	NE	ND
Methylene chloride	40	NE	0.54C
Trichlorofluoromethane	3400	NE	ND
1,1-Dichloroethene	6	7	ND
1,1-Dichloroethane	20	NE	ND
Total 1,2-Dichloroethene	16	NE	ND
Chloroform	100	100	ND
1,2-Dichloroethane	1	5	ND
1,1,1-Trichloroethane	200	200	0.25C
Carbon tetrachloride	5	5	ND
Bromodichloromethane	100	100	ND
1,2-Dichloropropane	10	NE	ND
Trans-1,3-dichloropropene	NE	NE	ND
Trichloroethene	5	5	ND
Dibromochloromethane	100	100	ND
1,1,2-Trichloroethane	100	NE	ND
cis-1,3-Dichloropropene	87	NE	ND
2-Chloroethylvinyl ether	NE	NE	ND
Bromoform	100	100	ND
1,1,2,2-Tetrachloroethane	NE	NE	ND
Tetrachloroethene	4	NE	ND
Chlorobenzene	30	NE	ND
1,3-Dichlorobenzene	130	NE	ND
1,2-Dichlorobenzene	130	NE	ND
1,4-Dichlorobenzene	(LOQ)0.5	NE	ND
1,1,1,2-Tetrachloroethane	NE	NE	ND

ALL UNITS ARE ug/l
MW = Monitoring Well

RADIAN = Radian Corporation, Sacramento
SAC = Radian Analytical Services, Sacramento

ND = Nothing detected
C = Analysis confirmed in second column analysis
LOQ = Limit of quantitation
NE = Not established

2.0 EVALUATION OF TWO OF THE INTERIM REMEDIAL MEASURES

Three interim remedial measures have been implemented by McClellan Air Force Base (AFB) as a result of the findings of the Groundwater Sampling and Analysis Program and other Remedial Investigation/Feasibility Studies (RI/FS) activities. These remedial measures include providing municipal water hookups to approximately 500 residences to the west, north and south of the base, installation of a synthetic liner/cover, clay cap and an extraction system in Area D, and installation of a groundwater extraction system in Area C. The residences were connected to the municipal system in the spring of 1986. Pumping of the Area D extraction system began in March 1987 and pumping of the Area C extraction system began on 29 August 1988. Both systems were installed to control groundwater flow and thus control the movement of contaminants away from the area. The Area C and D extraction systems are discussed below.

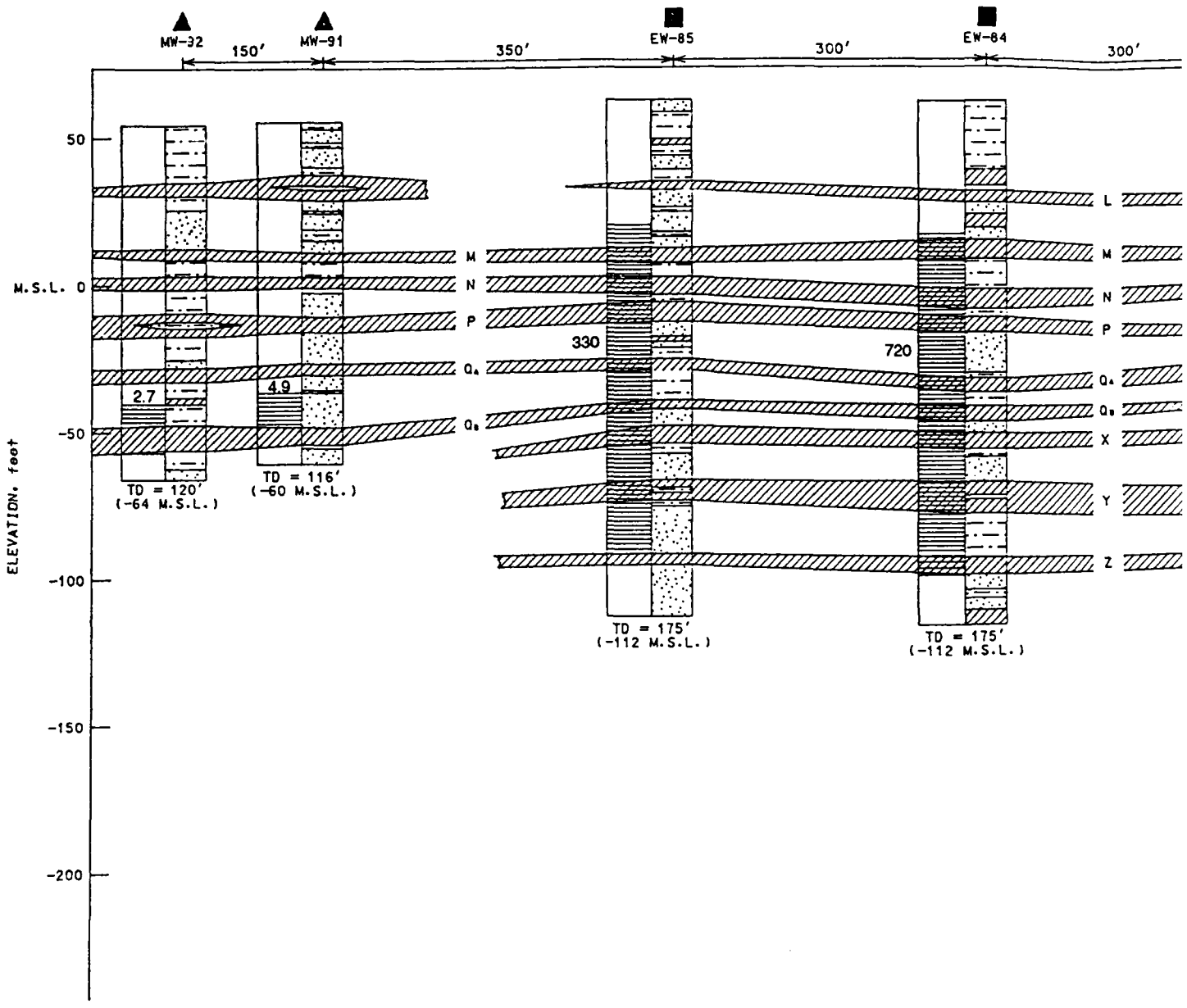
2.1 Area D Extraction System

The Area D extraction system consists of six extraction wells located in the area of a sludge/waste pit that has been excavated and capped. The wells are continuously pumped and collectively produce approximately 77 to 80 gallons per minute (gpm). The extracted water is then pumped via an aboveground pipeline to the Groundwater Treatment Plant (GTP) where the water is treated to remove contaminants.

The six extraction wells are all screened from 40 to 160 feet below ground surface (bgs) or in the shallow and middle monitoring zones. As shown on the geologic cross section (Figure 2-1), at this depth beneath Area D there are alternating sands, silts and clayey silts. The cross section as shown on the surface trace (Figure 2-2) traverses Area D from north to south and includes three of the six extraction wells.

The purpose of the extraction system is to isolate and contain contaminants within Area D (McLaren Environmental Engineering, 1987). To accomplish this goal, McLaren recommended that the evaluation of the effectiveness of the extraction system be based on gradient controls between

D
SOUTH


MW-32
150'
MW-91
350'
EW-85
300'
EW-84
300'
50
M.S.L. 0
-50
-100
-150
-200
ELEVATION, feet
M
N
P
Qa
Qb
2.7
4.9
TD = 120'
(-64 M.S.L.)
TD = 116'
(-60 M.S.L.)
330
720
L
X
Y
Z
TD = 175'
(-112 M.S.L.)
TD = 175'
(-112 M.S.L.)

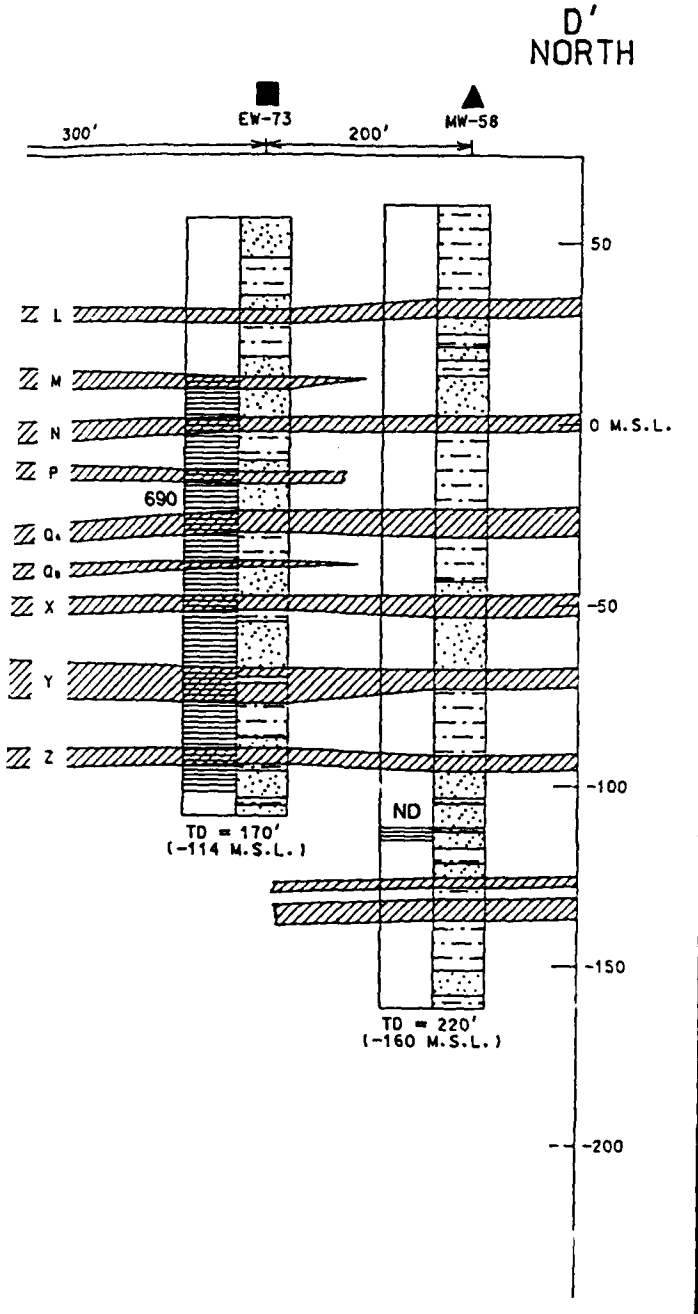


Figure 2-1.
Subsurface Profile Area D
(D - D')

LEGEND

▲	MONITORING WELL (MW)
■	EXTRACTION WELL (EW)
☼	BASE PRODUCTION WELL (BW)
M.S.L.	MEAN SEA LEVEL
TD	TOTAL DEPTH
	GRAVELLY SAND
	SAND
	SILT
	CLAYEY SILT
	NO DATA
	SCREEN INTERVAL

SCALE

HS: 1" ≈ 390'
VS: 1" ≈ 54'
VE ≈ 7.2

NOTE: TCE concentrations are reported next to screen intervals in ug/L for January through March 1989 sampling period.
ND = Not Detected

RADIAN CORPORATION

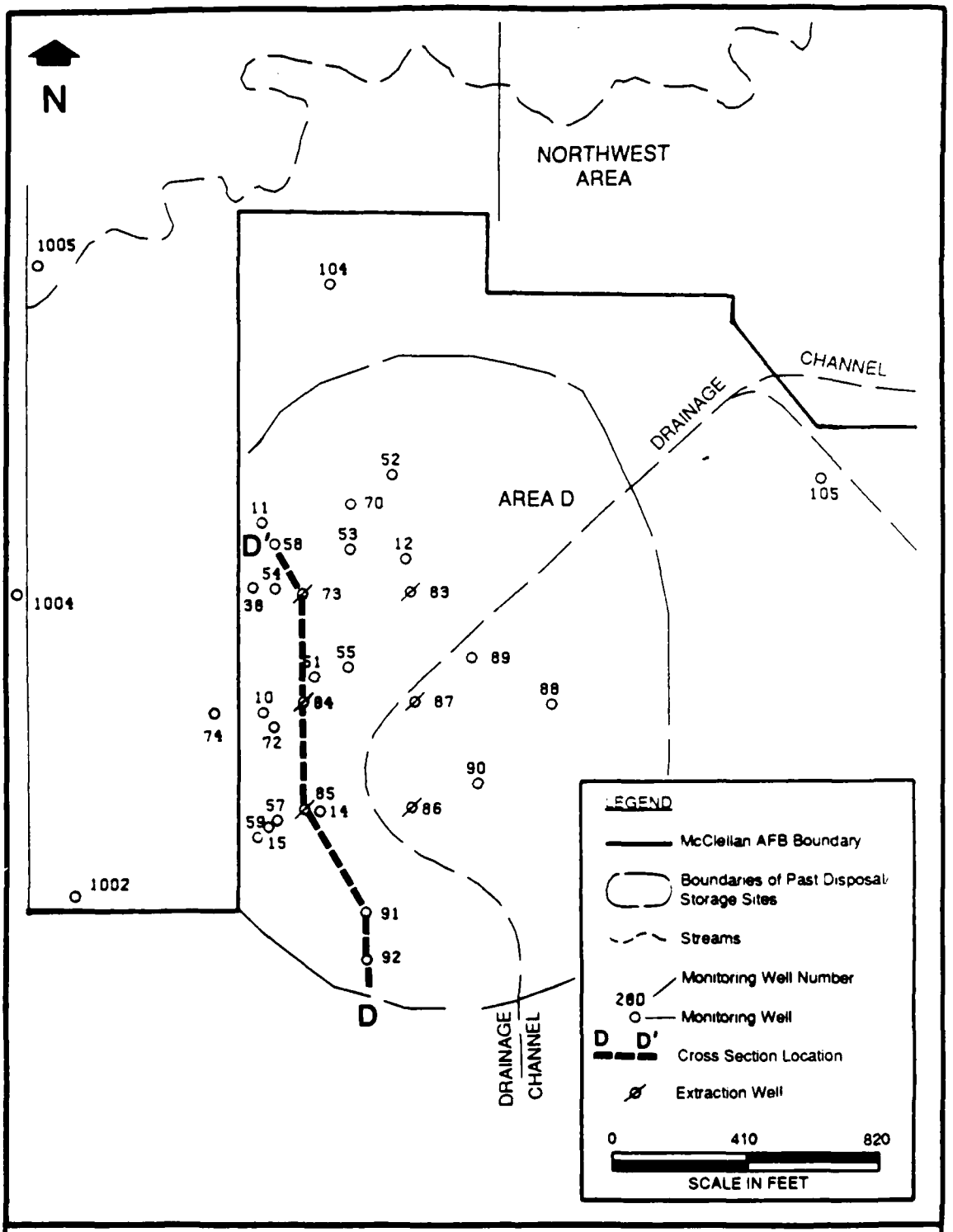


Figure 2-2. Location of Monitoring Wells and Cross Sections in Area D.

specific pairs of wells. The specified gradients were based on head differences of 0.2 feet between the well pairs. McLaren also recommended pumping at the minimum flow rate of 78 gallons per minute (gpm), which would result in a 3-foot drawdown in the monitoring wells after one year of pumping. McLaren specified the 78 gpm flow rate to minimize the decline of groundwater levels, thereby prolonging the usefulness of the extraction system.

The effectiveness of the Area D extraction system is evaluated below based on McLaren's gradient criteria. Long-term changes in contaminant concentrations from several monitoring wells were also reviewed to examine the effect of the extraction system on water quality.

Water-Level Data

Water-level data for the McLaren-specified well pairs were measured in late December 1988 and early January 1989 prior to groundwater sampling. These data were used to calculate head differences and gradients. Table 2-1 presents the well pairs and calculated head differences and gradients. As shown in the table, the extraction system is operating at a rate that meets the gradient criteria established by McLaren Engineers. The potentiometric surface maps of Area D (Plates 3 and 5) also illustrate the effects on the groundwater flow directions from pumping of the Area D extraction system. The maps show contours of equal head; groundwater flow is perpendicular to these contours in the direction of decreasing head. In both the shallow and middle monitoring zones, flow is toward the extraction wells. Water level data were obtained from Metcalf & Eddy in December 1988 and were used to calculate head differences and gradients for well pairs MW-54 & MW-76, MW-72 & MW-74, and MW-91 & MW-92 (personal communication, Metcalf & Eddy, December 1988). It appears that three Radian water-level measurements were problematic in MW-74 , MW-76, and MW-91 when compared to Metcalf & Eddy's December 28, 1988 water-level measurements. Therefore, the Metcalf & Eddy data were used to calculate gradients in the three previously noted well pairs.

RADIAN CORPORATION

TABLE 2-1. HEAD DIFFERENCES AND GRADIENTS OF SELECTED WELL PAIRS IN AREA D, JANUARY THROUGH MARCH, 1989

Well Pair	Monitoring Zone	Head Difference (feet)	Gradient (feet/feet)	Gradient (feet/mile)
MW-53 & MW-70	Middle	NC	NC	NC
MW-54 & MW-76[a]	Middle	-0.41	0.0028	15.0
MW-72 & MW-74[a]	Middle	-0.59	0.0048	25.5
MW-89 & MW-88	Shallow	-0.85	0.0030	17.4
MW-90 & MW-88	Shallow	-0.83	0.0028	14.6
MW-91 & MW-92[a]	Shallow	-0.25	0.0019	10.0

NC - Not calculated because water level could not be measured in MW-53.

Note: First well of the well pair is located closest to the extraction well, negative sign indicates gradient is towards the extraction well.

[a] Head differences and gradients for these well pairs were calculated using Metcalf & Eddy's December 28, 1988 water level measurements.

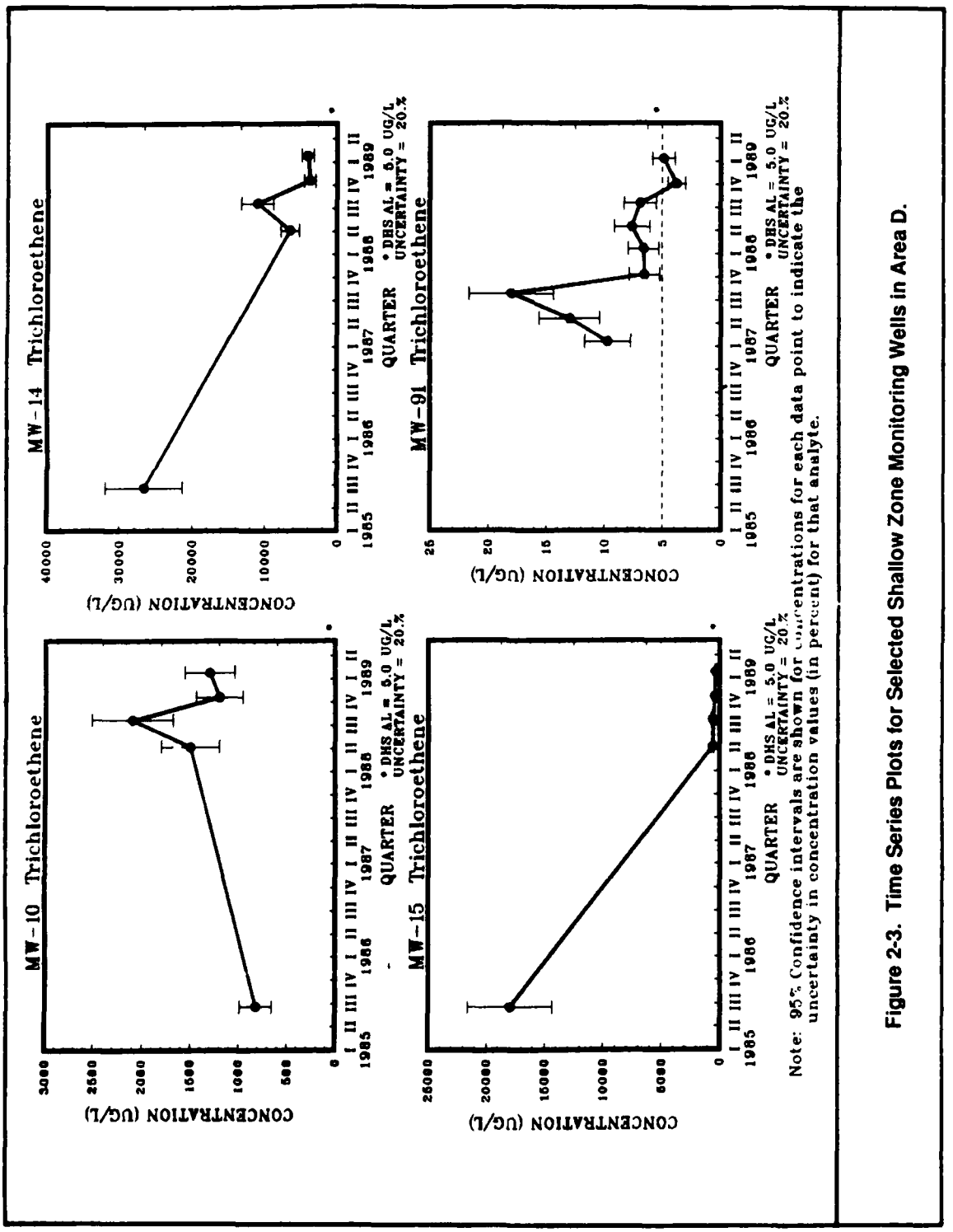
Analytical Data

Analytical results were reviewed from shallow, middle, and deep zone monitoring wells located both on base and off base. Time series plots for 12 of the monitoring wells were prepared using Trichloroethene (TCE) data (Figures 2-3, 2-4, 2-5 and 2-6). The time series plots focus on TCE because it is the most widely detected compound in the McClellan AFB groundwater monitoring network and in Area D. The TCE data were plotted for wells with sampling history of at least three points.

For the purpose of qualitatively evaluating the effectiveness of the extraction system, the long-term changes in TCE concentrations were reviewed for selected monitoring wells. A decreasing trend in concentrations would be expected in monitoring wells the greatest radial distance from the extraction wells, but still within the influence of the wells. The monitoring wells close to the extraction wells are expected to show greater TCE concentrations over a longer period of time because they are near the contaminant sources and are also near extraction wells that are drawing contaminated groundwater toward the wells. The time series plots for the 12 monitoring wells are evaluated below.

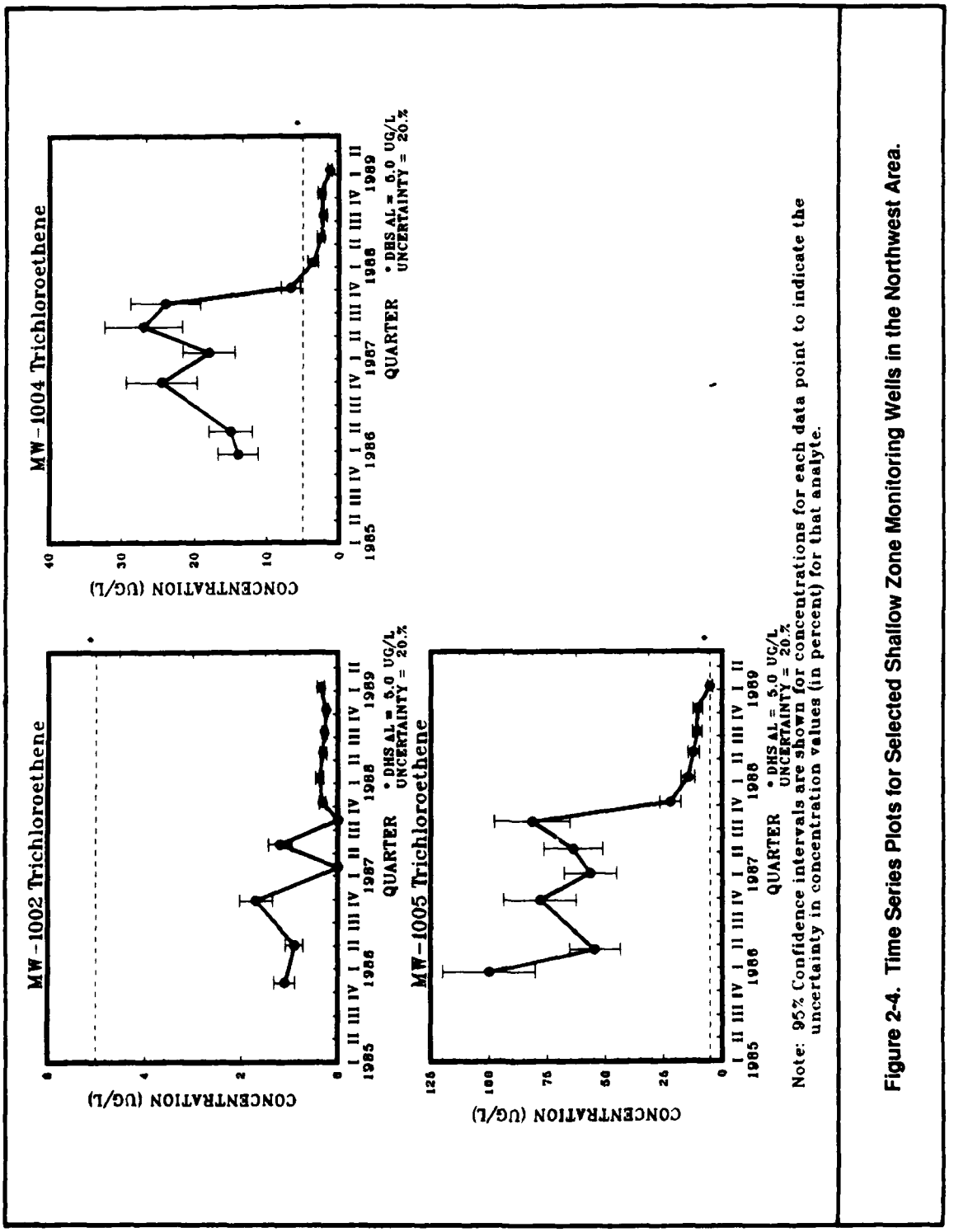
Included on each time series plot are "error bars" of $\pm$20 percent for each data point. The bars represent the sampling uncertainty associated with each reported concentration and are based on statistical analysis. The sampling variability is attributed to both laboratory and field procedures.

Representative time series plots were developed for four shallow zone monitoring wells located in Area D and three shallow zone monitoring wells located approximately 500 feet west of Area D. The on-base monitoring wells are MW-10, MW-14, MW-15, and MW-91 and the off-base wells are MW-1002, MW-1004, and MW-1005. The locations of these wells are shown in Figure 2-2. The time series plots for MW-10, MW-14, and MW-15 (Figure 2-3) are based on five sampling events, one in 1989, three in 1988 and one sampling event in 1985. The time series plots for these wells, except MW-10, indicate TCE concentrations during the past three sampling events are lower than in 1985.



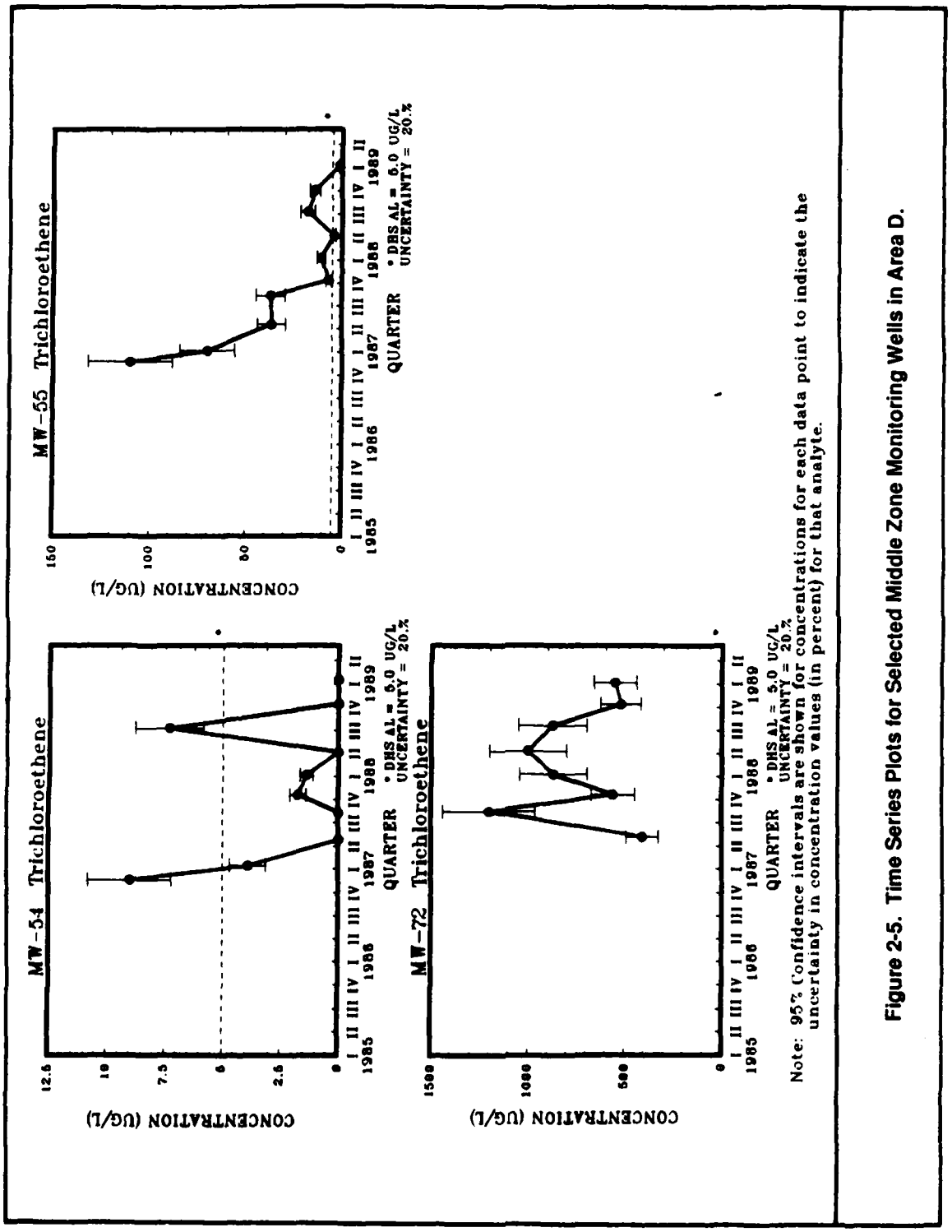
Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-3. Time Series Plots for Selected Shallow Zone Monitoring Wells in Area D.



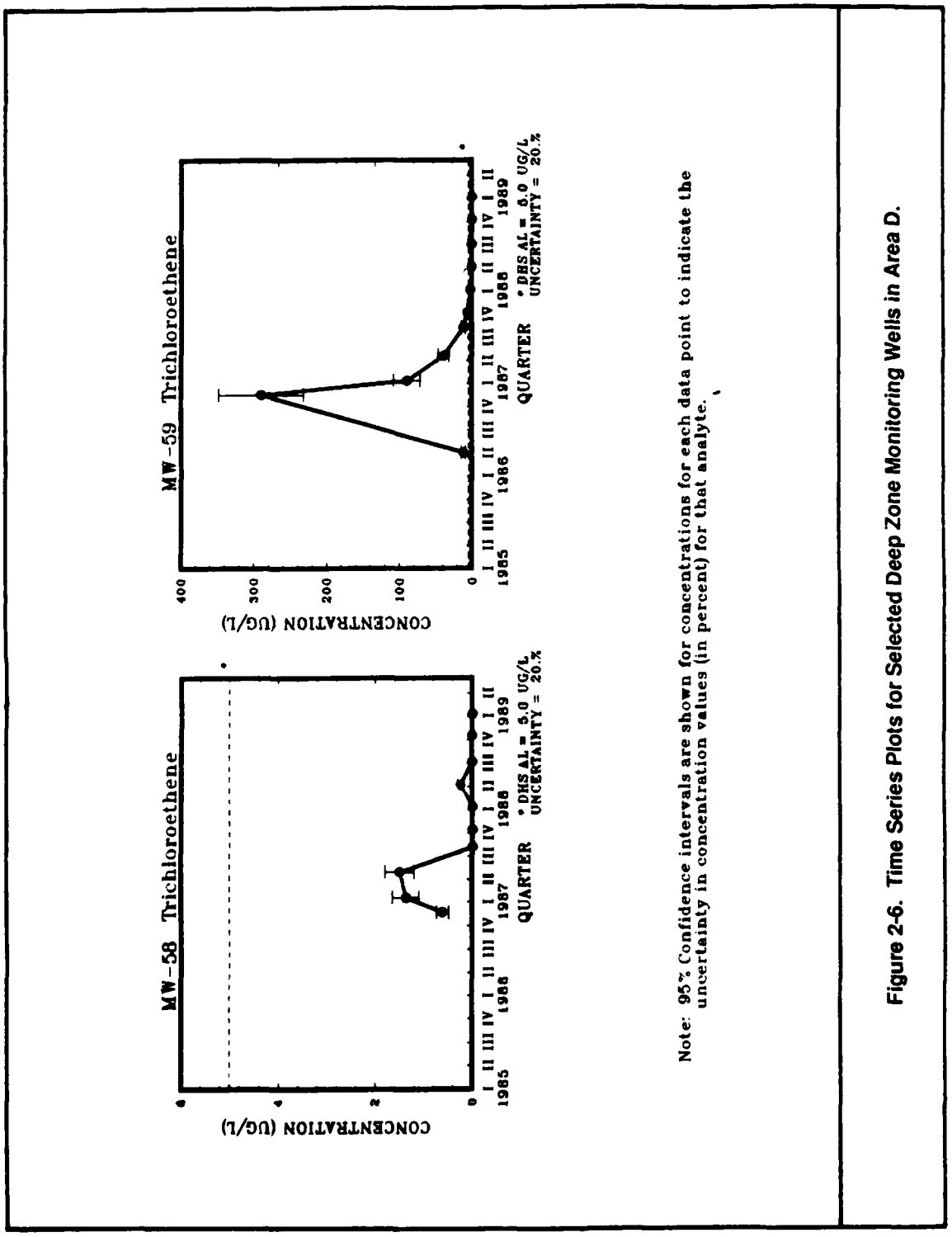
Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-4. Time Series Plots for Selected Shallow Zone Monitoring Wells in the Northwest Area.



Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-5. Time Series Plots for Selected Middle Zone Monitoring Wells in Area D.



Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-6. Time Series Plots for Selected Deep Zone Monitoring Wells in Area D.

Trichloroethene concentrations in MW-10 appear to have increased since 1988 as compared to 1985. Trichloroethene concentrations in MW-10 and MW-14 show a slight increase during this sampling period compared to the previous sampling period.

The time series plot for MW-91 (Figure 2-3) indicate increasing concentrations until Third Quarter 1987, after which TCE concentrations have decreased and leveled off. Trichloroethene concentrations in MW-91 have been below drinking water standards during the last two sampling periods. Monitoring well MW-91 as shown in Figure 2-2, is located south of the extraction system well field.

The time series plots for the three off-base monitoring wells (MW-1002, MW-1004, and MW-1005) show long-term decreases in TCE concentrations that have stabilized since the Fourth Quarter 1987 (Figure 2-4).

Overall, the time series plots for the shallow zone monitoring wells located outside the well field show decreasing trends that have leveled off in recent sampling events. Trichloroethene levels in MW-91 have decreased to below drinking water standards. The long-term trends for shallow zone monitoring wells located near the extraction wells (MW-10, MW-14, and MW-15) are not readily apparent, but appear to be stabilizing. High concentrations of TCE may continue to be detected in these wells because they are located near extraction wells that are drawing contaminated water toward them.

There are three middle zone monitoring wells in Area D for which time series plots were developed (Figure 2-5). These wells, located near the extraction wells (Figure 2-2) are MW-54, MW-55, and MW-72. Monitoring wells MW-54 and MW-55 are located close to EW-73, the extraction well with the highest contaminant concentrations. Trichloroethene has not been detected in MW-54 during the past two sampling events. Trichloroethene levels in MW-55 have decreased since 1987 and are now below drinking water standards. The time series plot for MW-72, located near EW-84, shows decreasing TCE concentrations during the second, third, and fourth sampling periods of 1988. Based

on these data, TCE levels appear to be decreasing in the three middle zone monitoring wells.

Trichloroethene concentrations over time were plotted for two deep zone monitoring wells in Area D. These wells, MW-58 and MW-59, are located northwest of EW-73 and southwest of EW-85, respectively (Figure 2-2). The time series plots for these two wells are shown in Figure 2-6. Trichloroethene was not detected in either well during the most recent sampling period. Since Second Quarter 1987, TCE has not been detected in samples from MW-58, except during the second quarter of 1988. The time series plots for MW-59 shows a concentration peak during the Fourth Quarter 1986 sampling, and then a decrease in concentration during the past nine sampling events. The TCE concentration trends for both wells suggest that contaminant concentrations in the deep zone are affected by the extraction well pumping of the shallow and middle monitoring zones. This may be due to the diluting of contaminant concentrations as uncontaminated water flows toward the extraction system.

In summary, monitoring wells in Area D have not all had the same kinds of fluctuations in TCE concentrations, which can be seen in the varied shapes of time series plots in Figures 2-3, 2-4, 2-5, and 2-6. The shallow zone monitoring wells located outside the extraction well field have shown a decrease followed by recent stabilizing of TCE concentrations. In the shallow zone monitoring wells located near the extraction wells, TCE levels have been fluctuating during the last four sampling periods. In the three middle zone monitoring wells, TCE levels appear to be decreasing. However, the statistical trend is still fluctuating. In the two deep zone monitoring wells, TCE concentrations have decreased to below detection levels. Based on water quality data, the Area D extraction system seems to be effectively removing contaminants because TCE concentrations in monitoring wells located outside the extraction well field continue to show decreasing trends.

Conclusions

The Area D extraction system was evaluated based on hydraulic gradients between monitoring wells and by long-term trends in contaminants, as

detected in shallow, middle, and deep monitoring zone wells. The Area D extraction system is being operated effectively based on hydraulic gradients recommended for specific pairs of monitoring wells. The water quality data from shallow monitoring zone wells outside of the well field do indicate that contaminant concentrations are decreasing or have stabilized since the extraction system began operating in July 1987.

2.2 Area C Extraction System

There are four extraction wells in Area C, located along a north-south line as shown in Figure 2-7. The average combined flow rate from the extraction wells in Area C is approximately 160 gpm. The extracted groundwater is pumped via an aboveground pipeline to the GTP where the water is treated to remove contaminants.

The four extraction wells in Area C are screened within three different monitoring zones. Extraction well EW-137 is screened from 162 to 172 feet bgs (deep "A" monitoring zone). Extraction Well EW-140 is screened from 180 to 190 feet bgs (deep "A" monitoring zone). Extraction Well EW-141 is screened from 230 to 240 feet (deep "B" monitoring zone). Extraction Well EW-144 is screened at two intervals from 120 to 130 feet bgs and from 165 to 185 feet bgs (middle and deep "A" zones). The geologic section beneath Area C has been illustrated on two cross sections. As shown in the south to north cross section (Figure 2-8), and the east to west cross section (Figure 2-9), most of the coarser-grained sediments do not appear to be continuous. There does appear to be a finer-grained zone that is continuous at a depth of approximately -50 to -100 ft msl. The four Area C extraction wells are screened below this zone. The locations of both profiles are shown in Figure 2-7.

To evaluate the effectiveness of an extraction system, the induced horizontal and vertical gradients can be used. In order to determine horizontal gradients, several pairs of monitoring wells are needed which are screened in the same monitoring zone, located radially outward from the

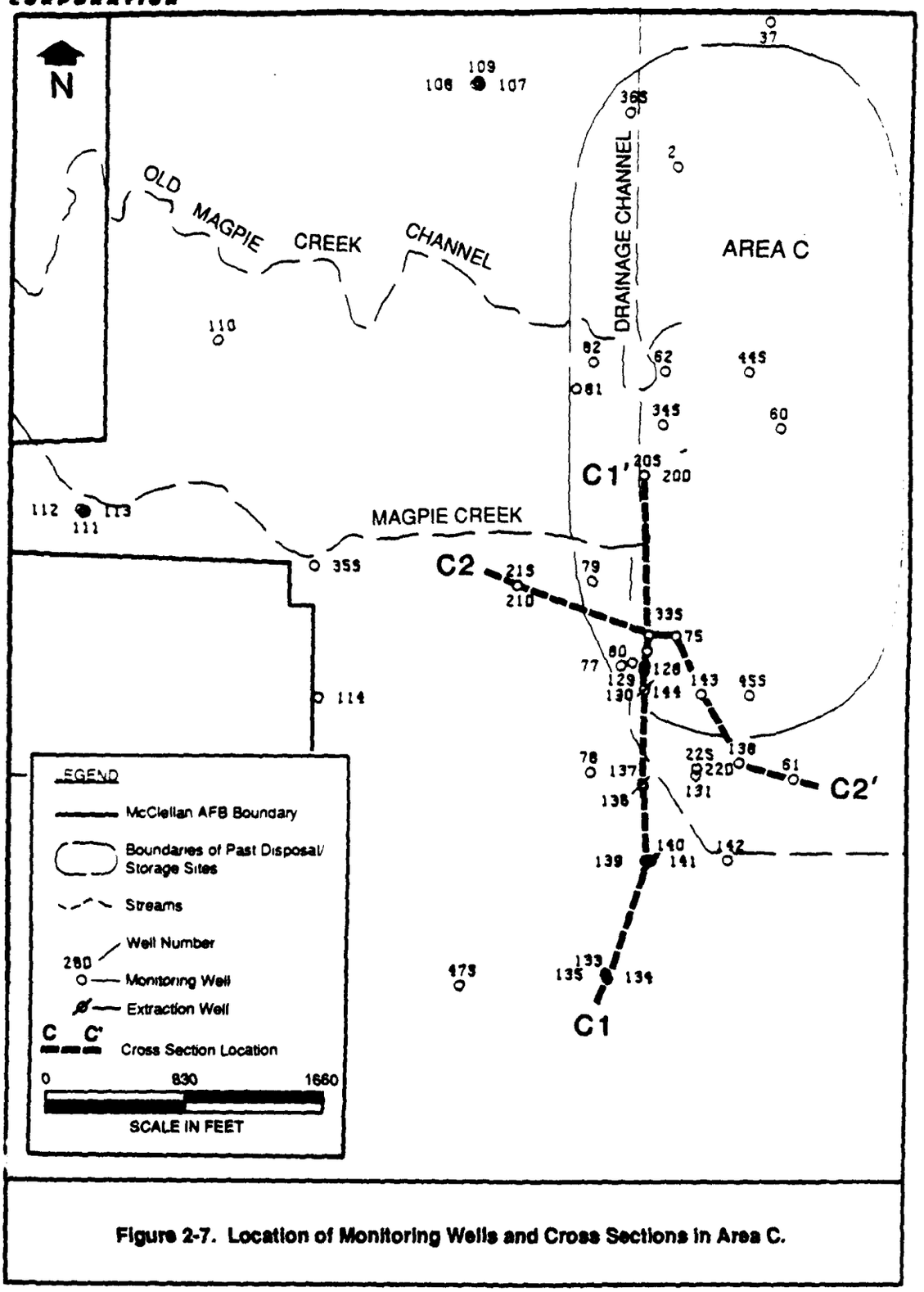
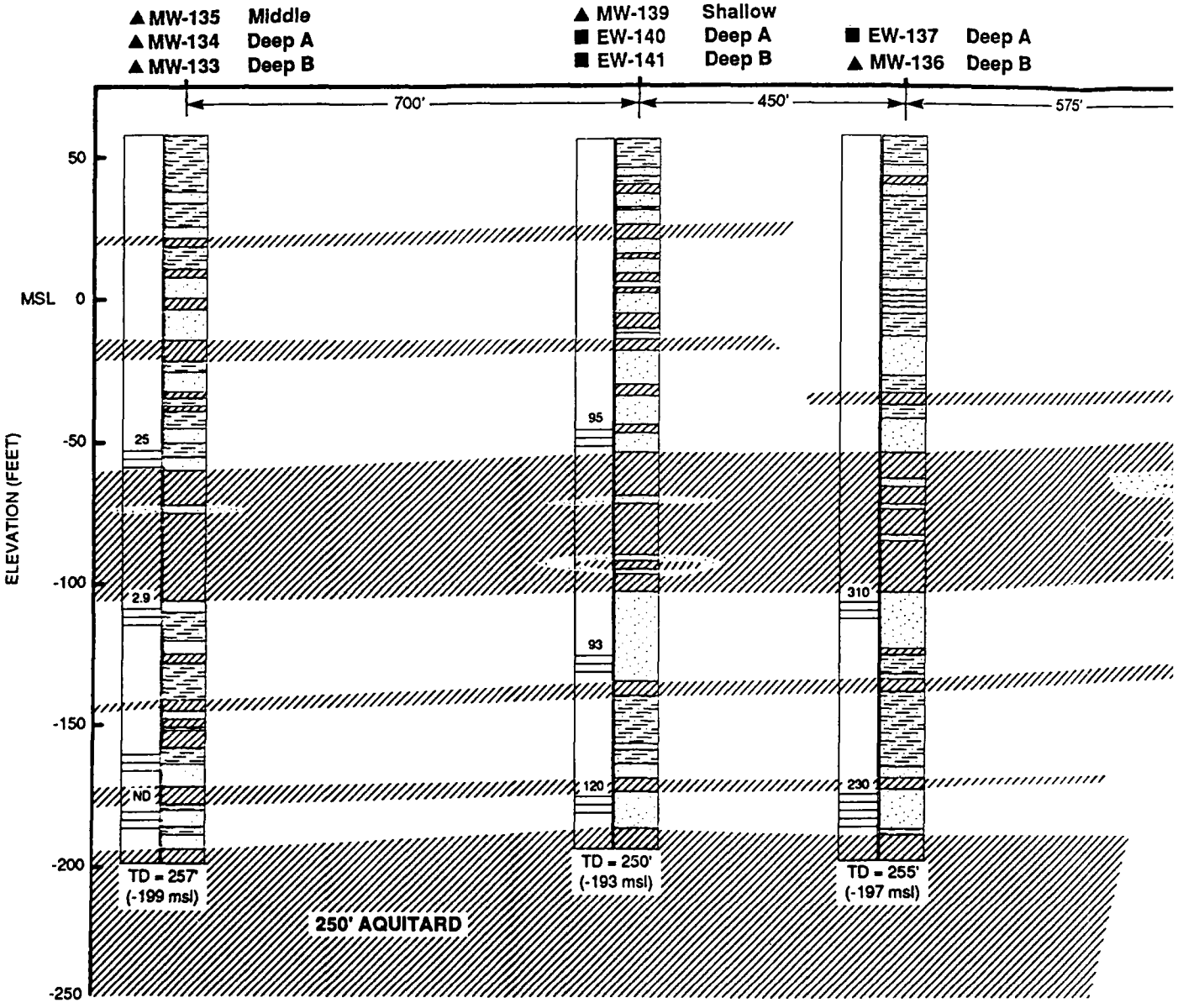


Figure 2-7. Location of Monitoring Wells and Cross Sections in Area C.

RADIAN
CORPORATION

SOUTH

C1



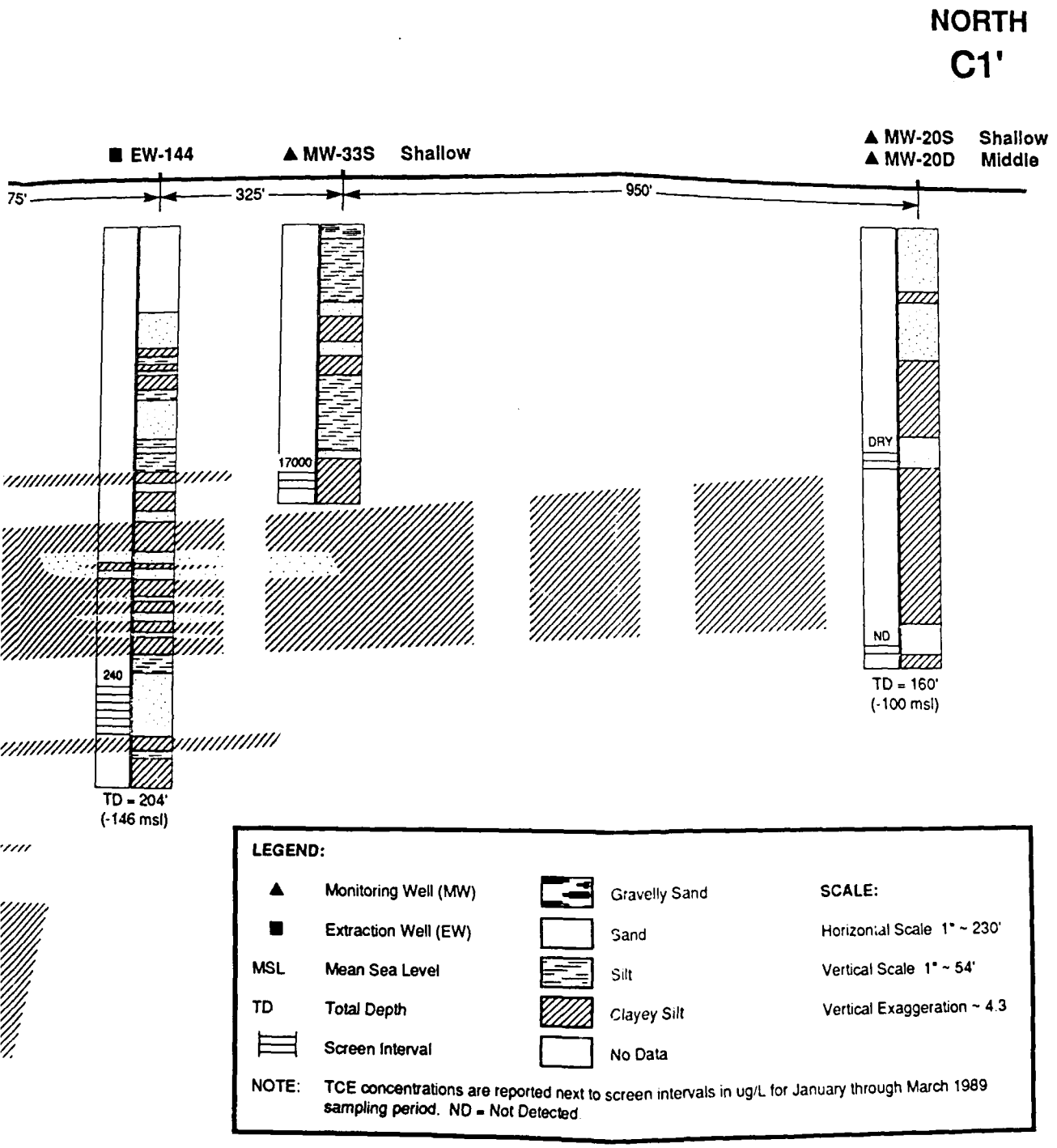
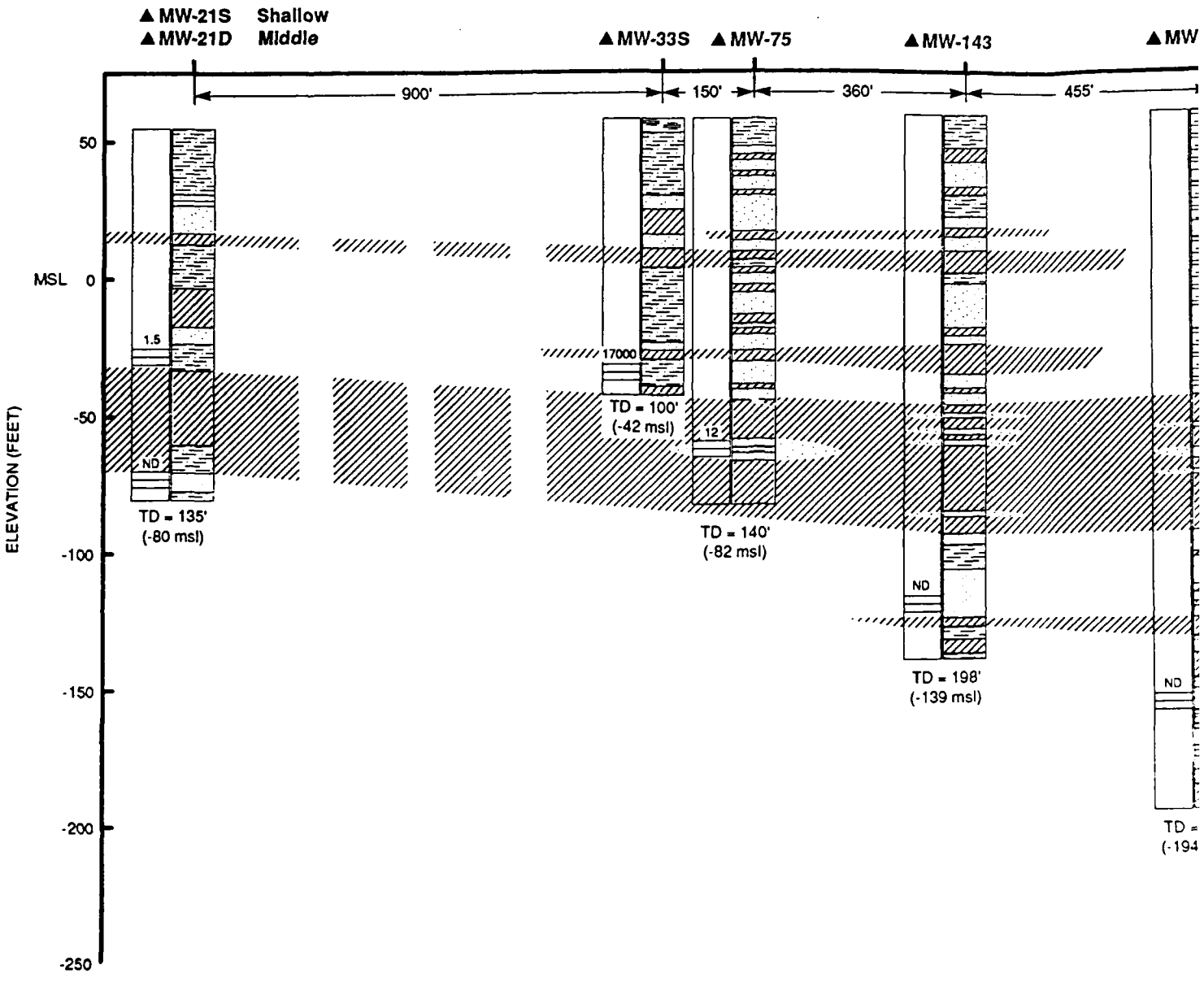


Figure 2-8.
Subsurface Profile Area C:
Depositional Dip Section (C1 - C1').

RADIAN
CORPORATION

NW

C2



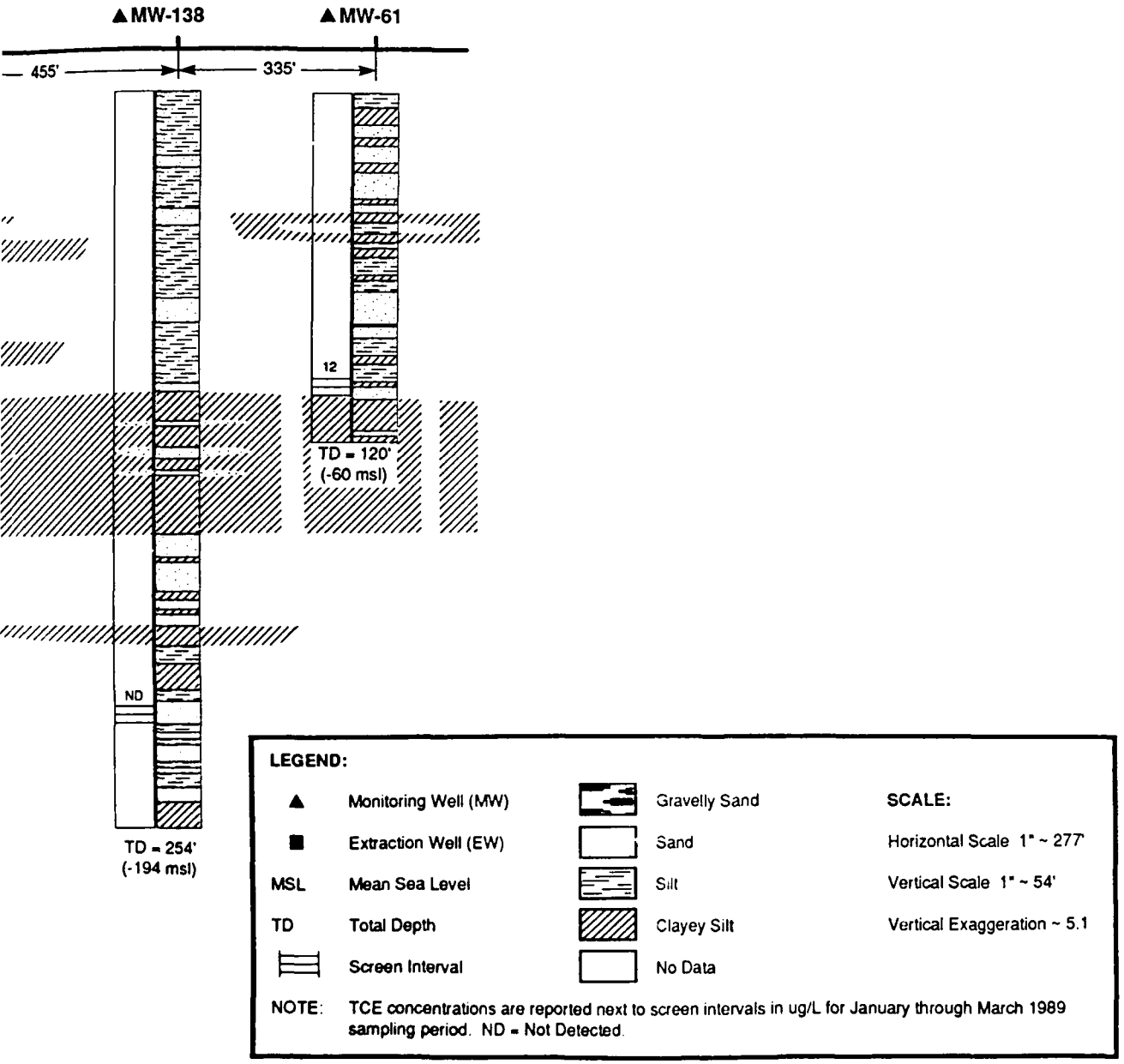


Figure 2-9.
Subsurface Profile Area C:
Depositional Strike Section (C2 - C2').

extraction wells, and perpendicular to the regional gradient. To evaluate the effect of the extraction system on vertical gradients, several pairs of wells are needed which are directly adjacent, but screened in different monitoring zones.

The number and locations of monitoring wells in Area C do not currently allow an evaluation of the extraction system effectiveness. Since precise operating specifications were not included in the extraction system report (EG & G, Idaho, 1988), the evaluation of the Area C extraction system can only focus on the changes in hydraulic head in the area. The optimum capture zone of the Area C system has not been specified. The capture zone of the wells, as currently operated, cannot be defined because there are only two pair of wells from which horizontal gradients can be calculated and none of the wells are screened in the same zone as the extraction wells. Additional wells located radially out from each extraction well are needed to define the induced gradients in each of the monitoring zones. Vertical gradients presently can only be determined at two well clusters. Thus, the effect of pumping from one monitoring zone on another monitoring zone cannot be determined, except at these two well clusters. A number of piezometers have been identified for installation as part of the Preliminary Groundwater Operable Unit Remedial Investigation (PGOURI) (Radian, March 1989). These will aid in determining the Area C extraction system zone of capture and in calculating vertical and horizontal gradients.

The horizontal and vertical gradients that can be calculated at this time in Area C are presented below. Analytical data on several monitoring wells are also discussed.

Water-Level Data

Water-level data in Area C wells measured in January prior to groundwater sampling were used to generate potentiometric maps. The potentiometric maps for the shallow and middle zones in Area C (Plates 2, and 4) do not show any effect of pumping. The deep "A" zone potentiometric map does

show some effect from the extraction system. There is a limited number of monitoring wells placed near enough to the extraction wells to delineate the capture zone of the extraction wells.

Horizontal gradients were calculated from water level data from two pairs of monitoring wells screened in the same monitoring zone (Table 2-2). Monitoring well MW-136 and MW-138 are located 16 feet and 580 feet east of EW-137 respectively. The two monitoring wells are screened in the deep "B" monitoring zone and EW-137 is screened in the deep "A". Monitoring wells MW-128 and MW-33S are located 122 feet and 318 feet north of EW-144, respectively. The two monitoring wells are screened in the shallow monitoring zone and EW-144 is screened in both the middle and deep "A" monitoring zone.

Vertical gradients were calculated at two monitoring well clusters, MW-128/MW-129/MW-130 and MW-134/MW-135 (Table 2-2). Monitoring well MW-128 is screened in the shallow monitoring zone; MW-129 and MW-135 are screened in the middle monitoring zone; and MW-130 and MW-134 are screened in the deep monitoring zone.

The calculated horizontal and vertical gradients determined for this sampling period and the previous sampling period are shown in Table 2-2. The horizontal gradient between MW-136 and MW-138 indicate a flow potential toward the extraction well EW-137. The calculated vertical gradients for the three well pairs indicate a downward flow potential from the shallow to middle monitoring zones and from the middle to the deep zone near EW-144.

Because there are no well clusters located near the other three extraction wells, the same type flow potential assessment cannot be conducted for EW-137, EW-140 and EW-141.

The information from the limited calculated horizontal and vertical gradients does not provide the data needed to determine the effect of the extraction system on the local groundwater flow patterns. The horizontal gradients calculated for the shallow and deep "A" monitoring zone indicate

RADIAN CORPORATION

TABLE 2-2. HEAD DIFFERENCES AND GRADIENTS OF SELECTED WELL PAIRS IN AREA C, JANUARY THROUGH MARCH, 1989

Well Pair	Monitoring Zone	Head Difference (feet)	Gradient
Horizontal			
MW-128 & MW-33S	Shallow	0.32	8.6 ft/mile (0.0016 ft/ft)
MW-136 & MW-138	Deep "B"	0.83	7.5 ft/mile (0.0014 ft/ft)
Vertical			
MW-128/MW-129	Shallow/Middle	0.45	-0.01 ft/ft
MW-129/MW-130	Middle/Deep	1.96	-0.04 ft/ft
MW-135/MW-134	Middle/Deep	0.13	<-0.01 ft/ft

Note: Negative sign indicates downward flow potential.

* First well of the well pair is located closest to the extraction well.

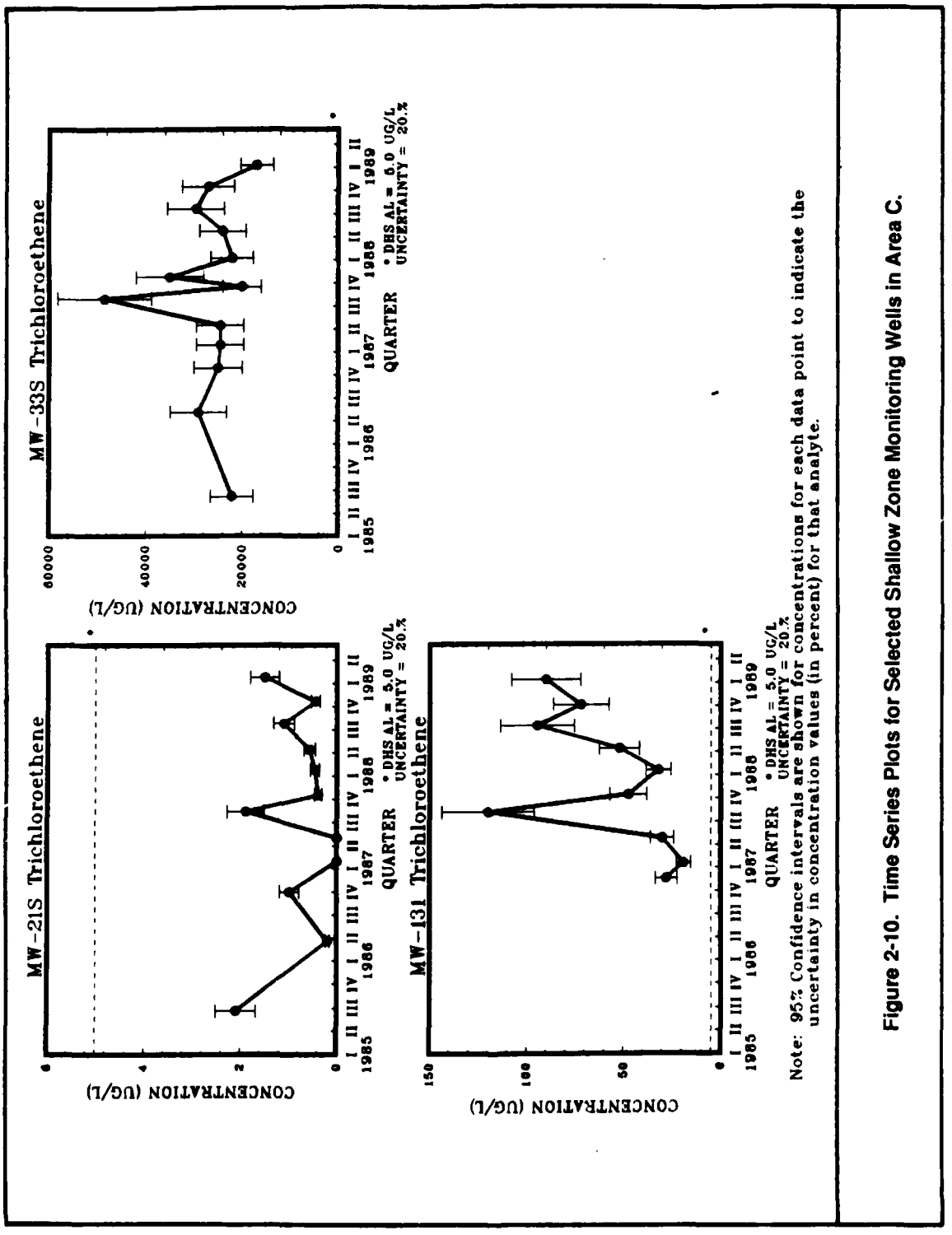
that there is a flow potential toward EW-144 and EW-137. Without additional wells in the three other monitoring zones, the influence of the four extraction wells on the groundwater flow pattern in these monitoring zones cannot be determined.

Analytical Data

Analytical data for several monitoring wells are presented using time series plots to develop information that can be evaluated in the future to determine the effect of the extraction system on water quality. Trichloroethene data was plotted from three shallow zone monitoring wells, two middle zone monitoring wells, and three deep zone monitoring wells. Trichloroethene was chosen as an indicator compound because it is the most widely detected compound in the McClellan AFB groundwater monitoring network.

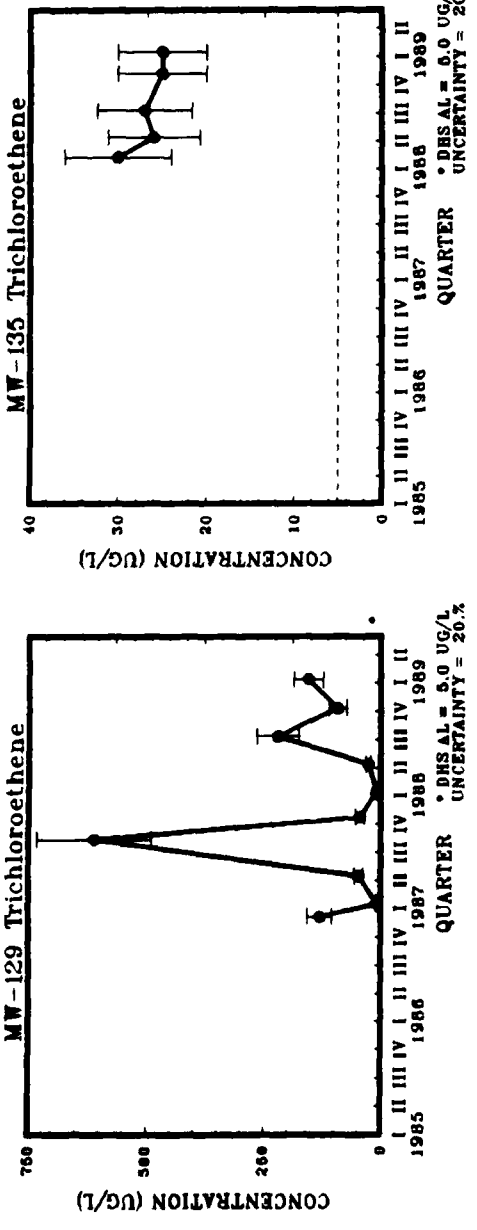
Time series plots for seven Area C wells are depicted in Figure 2-10, 2-11, and 2-12. Figure 2-10 presents time series plots for three shallow zone monitoring wells, MW-21S, MW-33S, and MW-131. These three monitoring wells are located north and east of the extraction wells. Trichloroethene concentrations are above drinking water standards in MW-33S and MW-131. Time series plots for MW-129 and MW-135, middle monitoring zone wells, are shown in Figure 2-11. Monitoring well MW-129 is located north of the extraction wells and MW-135 is located south of the extraction wells. Trichloroethene concentrations are above drinking water standards in both MW-129 and MW-135. Time series plots for two deep zone monitoring wells are shown in Figure 2-12. Monitoring wells MW-134 and MW-130 contain TCE at concentrations below drinking water standards. Monitoring Well MW-134 is located south of the extraction wells and MW-130 is located north of the extraction wells.

The time series plots for the seven wells all show fluctuating trends. The TCE trends will be reviewed over time to qualitatively assess whether the extraction wells are preventing the migration of contaminants away from Area C. Time series plots from additional wells may be added if specific trends become apparent. The TCE concentrations in monitoring wells south of



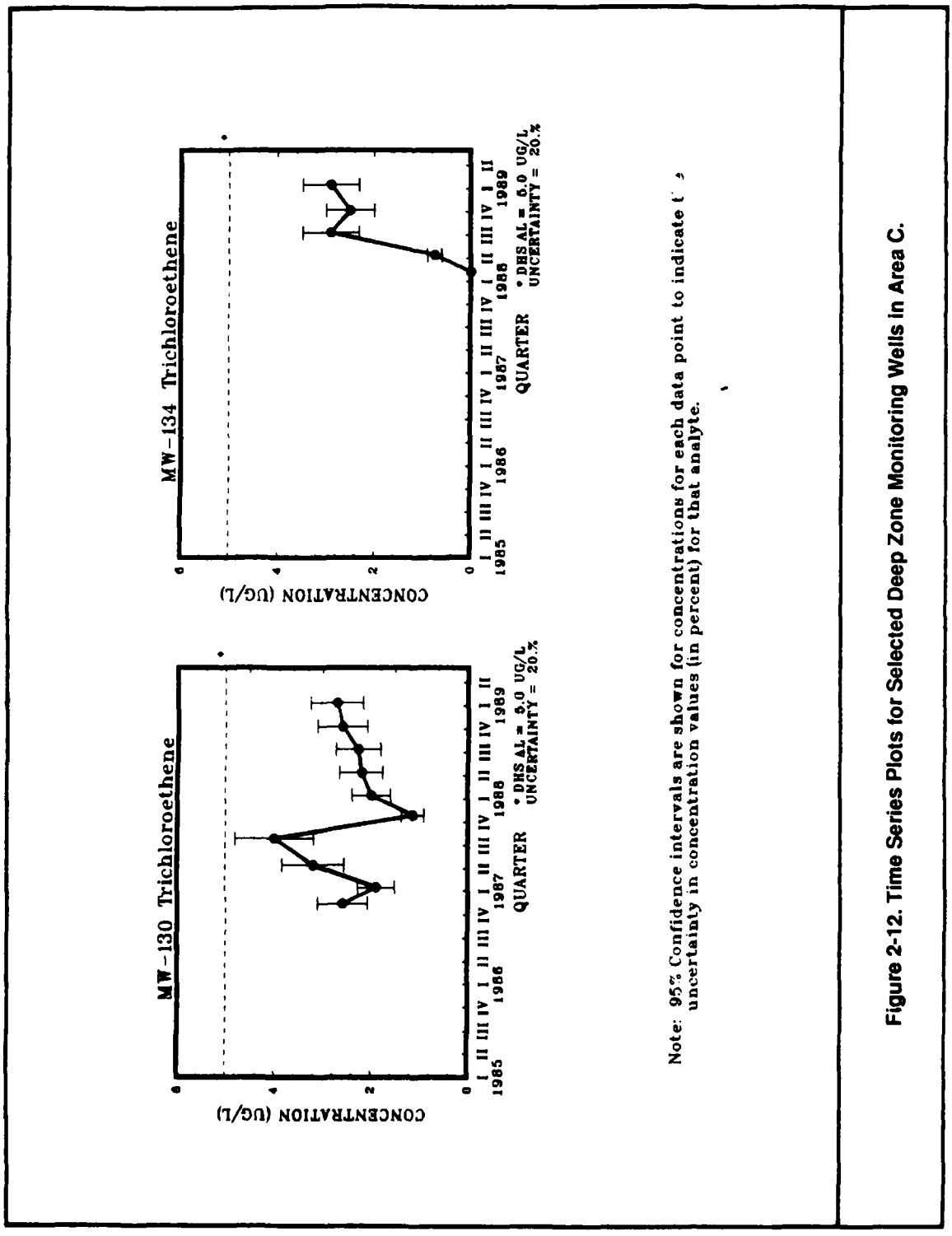
Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-10. Time Series Plots for Selected Shallow Zone Monitoring Wells in Area C.



Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-11. Time Series Plots for Selected Middle Zone Monitoring Wells in Area C.



Note: 95% Confidence intervals are shown for concentrations for each data point to indicate the uncertainty in concentration values (in percent) for that analyte.

Figure 2-12. Time Series Plots for Selected Deep Zone Monitoring Wells in Area C.

the extraction system should become stable or decrease over time if the extraction wells are preventing migration of contaminants away from Area C. Tests for seasonality were also performed on these data. Seasonality is the appropriate cyclical trend for which to analyze these data. Seasonality results were reported in the Annual Technical Report (Radian, April 1989) and results indicate insufficient evidence currently exists to verify seasonal trends.

Conclusions

The Area C extraction system was designed to remove contaminants near the source as an interim remediation measure. Further work in the RI/FS process will allow time for upgrading the system by installing piezometers and evaluating the need for constructing additional extraction wells in Area C. However, at the present time, the influence of the Area C extraction system cannot be evaluated using the existing network of monitoring wells. There are not enough well pairs to determine the effect of the extraction wells on the hydraulic gradients, and thus evaluate changes in local groundwater flow patterns. There are also not enough analytical data because the extraction system has not been in operation long enough to identify any changes in contaminant concentrations. Finally, trichloroethene concentration trends of monitoring wells located upgradient and downgradient of the extraction wells will continue to be examined in order to determine the extent of Area C groundwater contamination which the extraction system is removing.

3.0 RECOMMENDATIONS

Based on field results and analytical data collected during January, February, and March 1989, the following recommendations are presented in Section 3.1. Section 3.2 presents the status of the recommendations given in previous quarterly reports.

3.1 Current Recommendations

(1) **Recommendation:** Sampling of Monitoring Well MW-64 should continue for at least one more round. Sampling of MW-7, MW-65, MW-66, and the newly installed wells in Area B and the Southwest Area should commence for at least three sampling rounds.

Rationale: These wells are located in Area B and the Southwest Area and may provide information useful for determining contaminant migration in and around the Area B Operable Unit. Three sample rounds will provide the information needed to evaluate the usefulness of these wells.

(2) **Recommendation:** McClellan AFB EM should provide access to a recently fenced-off monitoring well cluster, MW-111/112/113, located in the West Area.

Rationale: These wells would provide useful water-level data. In addition, an increasing contaminant trend has been observed in MW-111 and needs continued monitoring.

(3) **Recommendation:** McClellan AFB EM should have maintenance work done on the three Area D extraction wells (EW-73, EW-83, and EW-84) with blocked sounding tubes.

Rationale: Unknown obstructions are blocking the sounding tubes. Removal will permit measurement of water levels.

3.2 Status of Previous Recommendation

The following is a brief status report on of the recommendations made in previous reports.

(1) **Recommendation:** Install a monitoring well in the deep monitoring zone at monitoring well cluster MW-1021/1022 in the southwest area.

Status: This recommendation will be initiated within the Preliminary Groundwater Operable Unit Investigation (PGOURI) (Radian, March 1989) during 1989. The Remedial Investigation Feasibility Study (RI/FS) Management Plan provides details concerning the scope and timing of the PGOURI.

(2) **Recommendation:** Install two clusters of monitoring wells on the east side of McClellan Air Force Base (AFB).

Status: This recommendation will be initiated within the PGOURI during 1989. The RI/FS Management Plan provides details concerning the scope and timing of the PGOURI work.

(3) **Recommendation:** Install a deep zone monitoring well in Area A next to middle zone monitoring well MW-27D.

Status: This recommendation is under consideration by the United States Air Force.

(4) **Recommendation:** Bladder pump safety lines should be attached to bladder pumps in all monitoring wells in which this has not yet been done.

Status: This recommendation is under consideration by the United States Air Force.

(5) **Recommendation:** Sampling of MW-25D and MW-26D should continue for one more sampling round to establish a database on these wells.

Status: These wells will be sampled again during the April 1989 Sampling Event. After three sampling rounds, the usefulness of the continued monitoring of these wells can be assessed.

(6) **Recommendation:** Resurvey wells that have been recently redeveloped and are lacking accurate elevation data. These wells include MW-7, MW-26D, MW-64, MW-65 and MW-68.

Status: These wells will be resurveyed during Spring 1989 Well Maintenance work.

RADIAN
CORPORATION

REFERENCES

Keith, L.H., et al. "Principles of Environmental Analysis," Anal. Chem., 1983, 55, pp 2210-2218.

McLaren Environmental Engineering, March 1987. "Area D Monitoring/Extraction System Technical Report No. 4 and Monitoring Plan and Operation and Maintenance Manual." McClellan AFB, CA, 1987.

Metcalf & Eddy, Personal Communication, December 1988.

Radian Corporation, March 1989. "Data Summary, October - December 1988," Installation Restoration Program, Stage 3, McClellan AFB, CA.

Radian Corporation, September 1988. "Semiannual Informal Technical Report," Installation Restoration Program, Stage 3, McClellan AFB, CA.

Radian Corporation, October 1988. "Hydrogeologic Assessment Work Plan," Installation Restoration Program, Stage 3, McClellan AFB, CA.

Radian Corporation, March 1989. "Preliminary Groundwater Operable Unit Remedial Investigation," Installation Restoration Program, Stage 6, McClellan AFB, CA.

Radian Corporation, April 1989. "Annual Technical Report (January - December 1988)," Installation Restoration Program, Stage 3, McClellan AFB, CA.

Radian Corporation, April 1989. "Quality Assurance Project Plan," Installation Restoration Program, Stage 3, McClellan AFB, CA.

U.S. EPA, November, 1986. "Test Methods for Evaluating Solid Waste, Third Edition." Office of Solid Waste and Emergency Response. Washington D.C. 20460.

RADIAN CORPORATION

APPENDIX A-1. MONITORING WELLS SAMPLED ANNUALLY

Well Number	Area	Rationale
ON-BASE MONITORING WELLS:		
MW-17D	Other	a,b,c
MW-18D	Other	a,c
MW-27D	A	a,b
MW-29D	Other	a,b,c
MW-36S	C	a,b
MW-67	A	a,b,c
MW-68	A	a,b,c
MW-69	A	a,b,c
MW-100	Other	a,c
MW-101	Other	a,c
MW-102	Other	a,b,c
MW-103	Other	a,b,c
MW-106	Other	a,b,c
MW-107	C	a,b,c
MW-108	C	a,b,c
MW-109	C	a,b,c
MW-110	C	a,b,c
MW-111	C	a,b
MW-112	C	a,b,c
MW-113	C	a,b,c
MW-116	Other	a,b
OFF-BASE MONITORING WELLS:		
MW-1009	Northwest	a,b,c,d
MW-1010	Northwest	a,b,c,d
MW-1011	Southwest	a,b,c,d
MW-1012	Northeast	a,c
MW-1017	West	a,b,c,d
MW-1018	West	a,b,d
MW-1026	Northwest	a,b,c,d
MW-1027	Northwest	a,b,c,d
MW-1028	Northwest	a,b,c,d
MW-1029	Northwest	a,b,d
MW-1030	Northwest	a,b,c,d
MW-1031	Northwest	a,b,c,d
MW-1032	West	a,b,c,d
MW-1033	West	a,b,c,d
MW-1034	West	a,b,c,d

(Continued)

RADIAN CORPORATION

APPENDIX A-1. MONITORING WELLS SAMPLED ANNUALLY
(Continued)

Well Number	Area	Rationale
OFF-BASE MONITORING WELLS:		
MW-1035	West	a,b,c,d
MW-1036	West	a,b,d
MW-1040	Northeast	a,b,c,d
MW-1041	Northwest	a,b,c,d
MW-1042	Northwest	a,b,c,d
MW-1043	Northwest	a,b,c,d

[a] Well is not currently used to evaluate the effectiveness of the Area C or Area D extraction system.

[b] Well is not located within 1,000 feet of an active water supply well.

[c] Well has consistently not contained detectable concentrations of contaminants or has never contained detectable concentrations of contaminants.

[d] Well is located upgradient within the interim remedial measure area.

RADIAN CORPORATION

Appendix A-2. SW 846 Method 8010 List of Compounds

Compound
*Benzyl chloride
*Bis(2-chloroethoxy)methane
*Bis(2-chloroisopropyl)ether
*Bromobenzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
*Chloroacetaldehyde
Chlorobenzene
Chloroethane
Chloroform
*1-Chlorohexane
2-Chloroethyl vinyl ether
Chloromethane
*Chloromethylmethyl ether
*Chlorotoluene
Dibromochloromethane
*Dibromomethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
*Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
trans-1,2-Dichloroethylene
Dichloromethane
1,2-Dichloropropane
trans-1,3-Dichloropropylene
*1,1,2,2-Tetrachloroethane
1,1,1,2-Tetrachloroethane
Tetrachloroethylene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethelene
Trichlorofluoromethane
*Trichloropropane
Vinyl chloride

* = Compounds presently not included in the list of analytes reported by Radian analytical services. Full list will be reported after July 1989.

Source: U.S. EPA, Nov. 1986. "Test Methods for Evaluating Solid Waste, Third Edition.

APPENDIX A-3. ANALYTICAL RESULTS FOR NETWORK MONITORING WELLS IN WHICH CONCENTRATIONS OF ANALYTES HAVE EXCEEDED STATE AND FEDERAL DRINKING WATER STANDARDS FROM 1985 TO MARCH 1989, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, McCLELLAN AFB

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
Vinyl chloride by Method 8010															
MW-10	2	1	ND	NS	NS	NS	NS	NS	NS	NS	NS	400C	360C	100C	73C
MW-11	2	1	ND	NS	NS	NS	NS	NS	NS	NS	NS	13C	ND	NS	ND
MW-33S	2	1	ND	NS	NS	2.9NC	15DL	11DL	5.1DL	ND	ND	ND	ND	ND	ND
MW-38D	2	1	2230	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-54	2	1	NS	NS	NS	1200C	1224C	190C	17C	40C	5.0C	ND	2.9C	ND	ND
MW-72	2	1	NS	NS	NS	NS	NS	41C	ND	ND	ND	ND	ND	ND	ND
Methylene chloride by Method 8010															
MW-10	40	NE	55.3	NS	NS	NS	NS	NS	NS	NS	NS	0.6C	ND	ND	ND
MW-11	40	NE	3140	NS	NS	NS	NS	NS	NS	NS	NS	260C	ND	NS	ND
MW-14	40	NE	11400	NS	NS	NS	NS	NS	NS	NS	NS	13C	ND	ND	ND
MW-15	40	NE	1790	NS	NS	NS	NS	NS	NS	NS	NS	0.7C	ND	ND	ND
MW-29D	40	NE	ND	NS	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS
MW-33S	40	NE	ND	NS	NS	ND	1.2C	4.0C	4.6DL	ND	ND	ND	ND	ND	1100U
MW-36S	40	NE	ND	NS	12	860BC	ND	ND	2.2C	ND	ND	ND	ND	ND	NS
MW-55	40	NE	NS	NS	NS	320C	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-59	40	NE	NS	NS	ND	520C	ND	ND	0.87C	ND	ND	ND	ND	ND	ND
MW-103	40	NE	NS	390	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS
MW-104	40	NE	NS	ND	870	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-105	40	NE	NS	220	420	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-112	40	NE	NS	260	12	ND	ND	ND	1.4C	ND	ND	ND	ND	NS	NS
MW-115	40	NE	NS	680	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-128	40	NE	NS	NS	NS	ND	ND	5.1C	1.1DL	ND	ND	ND	ND	ND	800C
MW-1001	40	NE	NS	310	18	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND
MW-1005	40	NE	NS	ND	ND	72BC	4.4C	0.42C	ND	ND	ND	ND	ND	ND	ND
MW-1013	40	NE	NS	ND	ND	230C	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1019	40	NE	NS	13	3.0	510C	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene by Method 8010															
MW-10	6	7	1500	NS	NS	NS	NS	NS	NS	NS	NS	910C	1400C	900C	840C
MW-11	6	7	64300	NS	NS	NS	NS	NS	NS	NS	NS	17000C	20000C	NS	19000C
MW-12	6	7	25500	NS	NS	NS	NS	NS	NS	NS	NS	8400C	22000P	4000P	2600P
MW-14	6	7	22600	NS	NS	NS	NS	NS	NS	NS	NS	5700C	13000P	4400P	4600C
MW-15	6	7	16500	NS	NS	NS	NS	NS	NS	NS	NS	83C	800C	850C	580C
MW-22D	6	7	297	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-28D	6	7	6.5	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
MW-38D	6	7	11500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-44S	6	7	NS	NS	ND	0.55C	ND	ND	8.5C	3.3 C	3.3C	2.8PC	4.8P	5.6C	4.7P
MW-53	6	7	NS	NS	NS	ND	ND	ND	2.1C	13C	11PC	2.5PC	12P	NS	NS
MW-54	6	7	NS	NS	NS	430C	171C	52C	11C	22C	8.5PC	0.36PC	100C	ND	ND

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.
DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

APPENDIX A-3. (continued)

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
1,1-Dichloroethene by Method 8010															
MW-55	6	7	NS	NS	NS	210C	160C	310C	130C	24C	33C	13PC	52P	61P	4.1P
MW-57	6	7	NS	NS	NS	2.3C	13C	ND	1.6C	1.2C	3.6C	0.31PC	ND	0.36P	ND
MW-59	6	7	NS	NS	11	270C	99C	50C	19C	15C	3.1PC	0.53PC	ND	ND	0.11P
MW-72	6	7	NS	NS	NS	NS	NS	550C	1900C	520C	930PC	800PC	800P	460C	370P
MW-74	6	7	NS	NS	NS	NS	NS	NS	NS	NS	NS	12C	12P	12P	NS
MW-76	6	7	NS	NS	NS	NS	NS	NS	NS	NS	NS	200C	48C	39P	NS
MW-89	6	7	NS	NS	NS	NS	ND	ND	ND	ND	0.75C	0.97C	1.1C	2.5C	6.2C
MW-91	6	7	NS	NS	NS	NS	14C	14C	8.1C	3.3C	1.3C	0.65PC	1.2C	0.74C	3.2C
MW-130	6	7	NS	NS	NS	3.2C	4.0C	6.1C	8.6C	2.5C	2.9PC	2.7PC	3.4P	2.0P	2.8P
MW-1004	6	7	NS	120	59	100C	62C	160C	150C	41C	23PC	16PC	12C	14C	7.0P
MW-1005	6	7	NS	160	99	110C	102C	160C	280C	79C	58PC	38PC	40P	33P	20C
1,1-Dichloroethane by Method 8010															
MW-10	20	NE	118	NS	NS	NS	NS	NS	NS	NS	NS	230C	180C	100C	110C
MW-11	20	NE	3560	NS	NS	NS	NS	NS	NS	NS	NS	520C	ND	NS	270C
MW-12	20	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	29C	ND	ND	ND
MW-14	20	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	49C	ND	ND	ND
MW-15	20	NE	1780	NS	NS	NS	NS	NS	NS	NS	NS	24C	ND	13C	ND
MW-33S	20	NE	ND	NS	NS	2.7NC	5.9DL	8.1DL	3.1DL	ND	ND	ND	440C	ND	ND
MW-38D	20	NE	4430	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-54	20	NE	NS	NS	NS	1400C	549C	150C	20C	10C	2.9C	0.39PC	7.6C	0.74P	0.45C
MW-72	20	NE	NS	NS	NS	NS	NS	64C	150C	50C	66PC	50PC	56P	44C	49P
MW-1005	20	NE	NS	41	15	26C	12C	27C	24C	7.5C	5.2PC	2.2PC	8.4P	4.9P	1.7C
Total 1,2-Dichloroethene by Method 8010															
MW-10	16	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	12C	460C	160C	130C
MW-11	16	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	51C	ND	NS	190C
MW-14	16	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	27C	ND	ND	ND
MW-27D	16	NE	ND	NS	NS	NS	NS	18C	30C	26C	16C	28PC	34P	20P	NS
MW-33S	16	NE	ND	NS	NS	ND	ND	ND	690C	430C	470C	460C	540C	360P	580P
MW-38D	16	NE	7020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-41S	16	NE	ND	NS	ND	ND	ND	24C	20C	17C	17C	22PC	25P	11P	ND
MW-54	16	NE	NS	NS	NS	ND	ND	62C	0.64C	5.7C	0.78C	ND	7.0C	ND	ND
MW-55	16	NE	NS	NS	NS	ND	27	11C	7.5C	5.7C	12C	7.4PC	28P	41P	0.72P
MW-63	16	NE	NS	NS	ND	ND	ND	65C	68C	52C	43C	33PC	46P	46P	31C
MW-72	16	NE	NS	NS	NS	NS	NS	48C	75C	74C	99C	48PC	80P	49C	34P
MW-76	16	NE	NS	NS	NS	NS	NS	NS	NS	NS	NS	28C	14C	8.6P	NS
MW-120	16	NE	NS	NS	ND	ND	ND	23C	ND	18C	10C	17PC	11C	7.6C	4.3C
MW-128	16	NE	NS	NS	NS	19DL	ND	250DL	400DL	ND	ND	530C	340C	200C	190C
MW-131	16	NE	NS	NS	NS	6.8DL	6.1	11C	34C	27C	14C	24PC	21C	31P	19P
MW-132	16	NE	NS	NS	NS	19	ND	32C	28C	29C	33C	22C	39P	35P	25C

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.
DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
Total 1,2-Dichloroethene by Method 8010															
MW-139	16	NE	NS	NS	NS	NS	NS	NS	NS	NS	24C	16PC	24C	34P	26C
MW-1000	16	NE	NS	ND	ND	0.23	ND	25C	ND	ND	ND	ND	0.16C	ND	ND
MW-1005	16	NE	NS	43	ND	ND	9.4	29C	16C	14C	5.1C	2.5PC	4.8P	2.5P	1.3C
Chloroform by Method 8010															
MW-14	100	100	2320	NS	NS	NS	NS	NS	NS	NS	NS	12C	ND	ND	ND
1,2-Dichloroethane by Method 8010															
MW-10	1	5	94.7	NS	NS	NS	NS	NS	NS	NS	NS	390C	410C	270C	250C
MW-11	1	5	ND	NS	NS	NS	NS	NS	NS	NS	NS	86C	ND	NS	ND
MW-14	1	5	2790	NS	NS	NS	NS	NS	NS	NS	NS	36C	ND	ND	34C
MW-15	1	5	ND	NS	NS	NS	NS	NS	NS	NS	NS	6.8C	5.6C	ND	ND
MW-27D	1	5	ND	NS	NS	NS	NS	ND	ND	0.74C	0.41C	0.98PC	2.7C	0.5P	NS
MW-33S	1	5	ND	NS	NS	62C	88C	ND	140DL	ND	ND	400C	530C	400P	200P
MW-38D	1	5	300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-41S	1	5	ND	NS	ND	ND	ND	.99DL	ND	2.1C	ND	ND	ND	ND	ND
MW-54	1	5	NS	NS	NS	39DL	14C	ND	0.23C	1.2C	0.17C	ND	1.0C	ND	ND
MW-55	1	5	NS	NS	NS	2.9DL	2.9	0.93DL	ND	0.95C	1.1C	0.34PC	1.0P	1.5P	ND
MW-72	1	5	NS	NS	NS	NS	NS	28C	140C	120C	140PC	210PC	150P	80C	130P
MW-76	1	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.4C	ND	0.38P	NS
MW-117	1	5	NS	NS	0.2	1.0C	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-128	1	5	NS	NS	NS	41DL	ND	63DL	75DL	ND	ND	ND	ND	ND	ND
MW-131	1	5	NS	NS	NS	ND	ND	ND	ND	ND	0.31C	0.45PC	1.1P	ND	0.82P
MW-139	1	5	NS	NS	NS	NS	NS	NS	NS	NS	1.8C	ND	ND	ND	1.1C
MW-1004	1	5	NS	ND	0.7	1.9C	ND	ND	ND	0.88C	0.40PC	0.26PC	0.25C	0.20C	0.22P
MW-1005	1	5	NS	5	9.8	14C	5.7C	7.9C	ND	5.1C	2.2PC	1.1PC	1.0P	ND	0.61C
1,1,1-Trichloroethane by Method 8010															
MW-10	200	200	327	NS	NS	NS	NS	NS	NS	NS	NS	36C	ND	23C	ND
MW-11	200	200	18100	NS	NS	NS	NS	NS	NS	NS	NS	3800C	2700C	NS	5600C
MW-12	200	200	12400	NS	NS	NS	NS	NS	NS	NS	NS	1200C	4500P	590P	360P
MW-14	200	200	22800	NS	NS	NS	NS	NS	NS	NS	NS	3100C	5500P	3200P	2300C
MW-15	200	200	4100	NS	NS	NS	NS	NS	NS	NS	NS	110C	110C	300C	170C
MW-33S	200	200	ND	NS	NS	ND	0.27DL	.49DL	280C	ND	ND	ND	ND	ND	ND
MW-38D	200	200	1870	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Carbon tetrachloride by Method 8010															
MW-27D	5	5	ND	NS	NS	NS	NS	27C	14C	9.6C	5.1C	9.1PC	11P	8.7P	NS
MW-33S	5	5	ND	NS	NS	ND	ND	.41DL	22DL	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane by Method 8010															
MW-33S	10	NE	ND	NS	NS	ND	19DL	23DL	13DL	ND	ND	ND	ND	ND	ND
MW-128	10	NE	NS	NS	NS	14DL	ND	19DL	16DL	ND	ND	ND	ND	ND	ND
Trichloroethene by Method 8010															
MW-6	5	5	86.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.

DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

APPENDIX A-3. (continued)

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
Trichloroethene by Method 8010															
MW-7	5	5	38.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	5	5	134	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	5	5	826	NS	NS	NS	NS	NS	NS	NS	NS	1500C	2100C	1200C	1300C
MW-11	5	5	11900	NS	NS	NS	NS	NS	NS	NS	NS	6200C	2900C	NS	2900C
MW-12	5	5	12100	NS	NS	NS	NS	NS	NS	NS	NS	2500C	6900P	1200P	590P
MW-14	5	5	26600	NS	NS	NS	NS	NS	NS	NS	NS	6500C	11000P	3800P	4100C
MW-15	5	5	18000	NS	NS	NS	NS	NS	NS	NS	NS	550C	590C	400C	340C
MW-19S	5	5	4.3	NS	2.6	8.2C	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-22D	5	5	213	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-26D	5	5	8.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5.7C	22C
MW-26S	5	5	21.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-27D	5	5	4.6	NS	NS	NS	NS	195C	76C	40C	35C	56PC	91P	67P	NS
MW-27S	5	5	63.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-28D	5	5	8.9	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
MW-33S	5	5	22600	NS	NS	25000C	27000C	25000C	52000C	35000C	22000PC	24000C	32000C	27000P	17000P
MW-36S	5	5	2.9	NS	1.8	2.2NC	ND	3.7C	5.3C	1.8C	1.9C	2.6C	2.5C	1.6P	NS
MW-38D	5	5	296	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-40S	5	5	190	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-41S	5	5	23.2	NS	20	44C	37C	91C	130C	100C	140PC	220PC	980P	2900P	3300C
MW-54	5	5	NS	NS	NS	9.0DL	3.9C	ND	ND	1.8C	1.4C	ND	7.3C	ND	ND
MW-55	5	5	NS	NS	NS	110C	70C	51C	37C	7.0C	11C	4.6PC	19P	14P	1.4P
MW-57	5	5	NS	NS	NS	2.5C	14C	ND	ND	0.58C	2.3C	ND	ND	0.35P	ND
MW-59	5	5	NS	NS	12	290C	108C	40C	13C	6.2C	2.3PC	0.49PC	ND	0.23P	ND
MW-61	5	5	NS	NS	3.1	7.4	22C	23C	14C	5.3C	4.3C	5.2PC	7.9P	7.3C	12C
MW-63	5	5	NS	NS	40	24C	41C	210C	190C	52C	69C	44PC	91P	58P	59C
MW-72	5	5	NS	NS	NS	NS	NS	410C	1200C	560C	870PC	1000PC	960P	520C	550P
MW-74	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	8.3C	4.6P	5.4P	NS
MW-75	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	17C	26C	12C	12C
MW-91	5	5	NS	NS	NS	NS	9.9C	13C	18C	6.7C	6.6C	7.6PC	6.9C	3.8C	4.9C
MW-92	5	5	NS	NS	NS	NS	6.2C	7.9C	9.4C	3.8C	4.4PC	4.1C	3.8C	3.25P	2.7P
MW-117	5	5	NS	NS	17	21C	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-120	5	5	NS	NS	24	20C	19.32C	25C	26C	9.3C	8.8C	12PC	9.8C	6.2C	5.1C
MW-123	5	5	NS	NS	3.1	7.1C	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-128	5	5	NS	NS	NS	41000C	28200C	55000C	68000C	27000C	19000PC	27000C	34000C	14000C	17000C
MW-129	5	5	NS	NS	NS	130C	10C	48C	610C	45C	11C	27C	220C	93C	140C
MW-131	5	5	NS	NS	NS	29C	19C	30C	120C	55C	32C	52PC	99P	72P	90P
MW-132	5	5	NS	NS	NS	90C	62C	110C	110C	130	77PC	48C	93P	95P	82C
MW-135	5	5	NS	NS	NS	NS	NS	NS	NS	NS	30C	26PC	27C	25P	25C
MW-136	5	5	NS	NS	NS	NS	NS	NS	NS	NS	230C	220PC	470C	360P	230C

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.
DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

APPENDIX A-3. (continued)

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
Trichloroethene by Method 8010															
MW-139	5	5	NS	NS	NS	NS	NS	NS	NS	NS	89C	74PC	83C	63P	95C
MW-1004	5	5	NS	14	15	26C	18C	27C	24C	7.2C	3.6PC	2.6PC	2.2C	2.4C	1.3P
MW-1005	5	5	NS	100	62	80C	59C	95C	86C	22C	15PC	12PC	14P	11P	5.2C
MW-1021	5	5	NS	NS	NS	57C	32C	57C	46C	17C	11PC	14C	18C	11C	15C
MW-1022	5	5	NS	NS	NS	13C	ND	20C	21C	7.6C	4.8PC	12PC	11P	10P	10C
MW-1041	5	5	NS	NS	NS	16C	ND	ND	ND	ND	ND	ND	ND	ND	NS
1,1,2-Trichloroethane by Method 8010															
MW-38D	100	NE	213	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tetrachloroethene by Method 8010															
MW-10	4	NE	64.9	NS	NS	NS	NS	NS	NS	NS	NS	2.4C	ND	ND	ND
MW-11	4	NE	2480	NS	NS	NS	NS	NS	NS	NS	NS	25C	ND	NS	ND
MW-12	4	NE	1260	NS	NS	NS	NS	NS	NS	NS	NS	200C	610P	70P	38P
MW-14	4	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	7.6C	ND	ND	ND
MW-22D	4	NE	13.5	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-33S	4	NE	ND	NS	NS	ND	9.8DL	8.7DL	6.9DL	ND	ND	ND	ND	ND	ND
MW-38D	4	NE	260	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-41S	4	NE	3.3	NS	0.6	0.18DL	ND	0.75DL	ND	3.2C	6.2PC	10PC	57P	370P	240C
MW-54	4	NE	NS	NS	NS	4.1DL	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-55	4	NE	NS	NS	NS	13C	46C	47C	ND	25C	6.8C	3.0PC	1.7P	1.5P	1.4P
MW-128	4	NE	NS	NS	NS	ND	ND	23DL	ND	ND	ND	ND	ND	ND	ND
MW-1021	4	NE	NS	NS	NS	2.8C	ND	5.6C	2.7C	3.3C	1.3PC	1.2C	1.8C	1.5C	1.4C
1,2-Dichlorobenzene by Method 8010															
MW-10	130	NE	69.8	NS	NS	NS	NS	NS	NS	NS	NS	200C	210C	85C	140C
MW-38D	130	NE	147	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,4-Dichlorobenzene by Method 8010															
MW-11	(LOQ)0.5	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	2.0C	ND	NS	ND
MW-14	(LOQ)0.5	NE	ND	NS	NS	NS	NS	NS	NS	NS	NS	1.4C	ND	ND	ND
MW-33S	(LOQ)0.5	NE	ND	NS	NS	6.2NC	6.1DL	15DL	7.1DL	ND	ND	ND	ND	ND	ND
MW-54	(LOQ)0.5	NE	NS	NS	NS	57DL	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-61	(LOQ)0.5	NE	NS	NS	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-128	(LOQ)0.5	NE	NS	NS	NS	ND	ND	5.7DL	5.5DL	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene by Method 8020															
MW-10	130	NE	NS	NS	NS	NS	NS	NS	NS	NS	NS	200C	170C	120P	140P
1,4-Dichlorobenzene by Method 8020															
MW-33S	(LOQ)0.5	NE	NS	NS	NS	4.2C	5.8C	7.2DL	7.0DL	ND	ND	ND	ND	ND	ND
MW-55	(LOQ)0.5	NE	NS	NS	NS	ND	.58DL	ND	ND	ND	ND	ND	ND	NS	NS
MW-61	(LOQ)0.5	NE	NS	NS	0.7	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS
MW-75	(LOQ)0.5	NE	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.73C	ND	NS	ND

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.
DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

APPENDIX A-3. (continued)

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
1,4-Dichlorobenzene by Method 8020															
MW-128	(LOQ)0.5	NE	NS	NS	NS	ND	ND	3.4DL	4.2DL	ND	ND	ND	ND	ND	ND
Benzene by Method 8020															
MW-10	.7	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	11C	ND	ND	ND
MW-11	.7	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	30C	ND	NS	ND
MW-54	.7	5	NS	NS	NS	9.5C	ND	1.0C	ND	ND	ND	ND	ND	NS	NS
MW-104	.7	5	P'S	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS
MW-112	.7	5	NS	ND	ND	2.2NC	ND	ND	ND	ND	ND	ND	ND	NS	NS
MW-1000	.7	5	NS	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS
MW-1015	.7	5	NS	0.9	ND	0.21	ND	ND	ND	ND	ND	ND	ND	NS	NS
MW-1021	.7	5	NS	NS	NS	ND	ND	1.1C	ND	ND	ND	ND	ND	NS	ND
Toluene by Method 8020															
MW-54	100	NE	NS	NS	NS	230C	4.7C	2.7C	ND	0.41C	ND	ND	ND	NS	NS
Vinyl chloride by Method 8240															
MW-10	2	1	NS	NS	NS	NS	NS	NS	NS	810	NS	NS	NS	NS	NS
MW-54	2	1	NS	NS	NS	NS	NS	77	NS	20	NS	ND	NS	NS	NS
Methylene chloride by Method 8240															
MW-11	40	NE	NS	NS	NS	NS	NS	NS	NS	1700	NS	NS	NS	NS	NS
1,1-Dichloroethene by Method 8240															
MW-10	6	7	NS	NS	NS	NS	NS	NS	NS	1100	NS	NS	NS	NS	NS
MW-11	6	7	NS	NS	NS	NS	NS	NS	NS	46000	NS	NS	NS	NS	NS
MW-12	6	7	NS	NS	NS	NS	NS	NS	NS	11000	NS	NS	NS	NS	NS
MW-14	6	7	NS	NS	NS	NS	NS	NS	NS	260	NS	NS	NS	NS	NS
MW-15	6	7	NS	NS	NS	NS	NS	NS	NS	1500	NS	NS	NS	NS	NS
MW-53	6	7	NS	NS	NS	NS	NS	NS	NS	15	NS	ND	13	NS	NS
MW-54	6	7	NS	NS	NS	NS	NS	28	NS	17	NS	ND	NS	NS	NS
MW-55	6	7	NS	NS	NS	NS	NS	43	NS	24	NS	NS	43	NS	NS
MW-59	6	7	NS	NS	NS	NS	NS	22	NS	9.5	NS	NS	NS	NS	NS
MW-72	6	7	NS	NS	NS	NS	NS	NS	NS	460	670	770	660	NS	NS
MW-74	6	7	NS	NS	NS	NS	NS	NS	NS	NS	NS	14	NS	NS	NS
MW-76	6	7	NS	NS	NS	NS	NS	NS	NS	NS	NS	110	NS	NS	NS
MW-91	6	7	NS	NS	NS	NS	13	NS	NS	ND	NS	ND	NS	NS	NS
MW-1004	6	7	NS	NS	NS	NS	NS	NS	NS	NS	25	NS	13	NS	NS
MW-1005	6	7	NS	NS	NS	NS	NS	85	NS	NS	NS	NS	NS	NS	NS
1,1-Dichloroethane by Method 8240															
MW-10	20	NE	NS	NS	NS	NS	NS	NS	NS	330	NS	NS	NS	NS	NS
MW-54	20	NE	NS	NS	NS	NS	NS	66	NS	8.5	NS	ND	NS	NS	NS
MW-72	20	NE	NS	NS	NS	NS	NS	NS	NS	43	61	54	64	NS	NS
MW-76	20	NE	NS	NS	NS	NS	NS	NS	NS	NS	NS	20	NS	NS	NS
Total 1,2-Dichloroethene by Method 8240															
MW-10	16	NE	NS	NS	NS	NS	NS	NS	NS	780	NS	NS	NS	NS	NS

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.
DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

RADIAN CORPORATION

APPENDIX A-3. (continued)

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
Total 1,2-Dichloroethene by Method 8240															
MW-27D	16	NE	NS	NS	NS	NS	NS	NS	NS	NS	23	NS	29	NS	NS
MW-33S	16	NE	NS	NS	NS	NS	530	340	370	NS	490	NS	660	NS	NS
MW-41S	16	NE	NS	NS	NS	NS	NS	NS	NS	NS	20	NS	13	NS	NS
MW-55	16	NE	NS	NS	NS	NS	NS	7.1	NS	4.8	NS	NS	22	NS	NS
MW-63	16	NE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	35	NS	NS
MW-72	16	NE	NS	NS	NS	NS	NS	NS	NS	58	88	57	83	NS	NS
MW-76	16	NE	NS	NS	NS	NS	NS	NS	NS	NS	NS	29	NS	NS	NS
MW-128	16	NE	NS	NS	NS	NS	230	ND	NS	NS	420	NS	ND	NS	NS
MW-132	16	NE	NS	NS	NS	NS	17	17	23	NS	25	NS	29	NS	NS
1,2-Dichloroethane by Method 8240															
MW-10	1	5	NS	NS	NS	NS	NS	NS	NS	330	NS	NS	NS	NS	NS
MW-72	1	5	NS	NS	NS	NS	NS	NS	NS	79	120	140	140	NS	NS
MW-1005	1	5	NS	NS	NS	NS	NS	3.6	NS	NS	NS	NS	NS	NS	NS
1,1,1-Trichloroethane by Method 8240															
MW-11	200	200	NS	NS	NS	NS	NS	NS	NS	10000	NS	NS	NS	NS	NS
MW-12	200	200	NS	NS	NS	NS	NS	NS	NS	3200	NS	NS	NS	NS	NS
MW-14	200	200	NS	NS	NS	NS	NS	NS	NS	350	NS	NS	NS	NS	NS
Carbon tetrachloride by Method 8240															
MW-27D	5	5	NS	NS	NS	NS	NS	NS	NS	NS	7.1	NS	8.8	NS	NS
Trichloroethene by Method 8240															
MW-10	5	5	NS	NS	NS	NS	NS	NS	NS	910	NS	NS	NS	NS	NS
MW-11	5	5	NS	NS	NS	NS	NS	NS	NS	8000	NS	NS	NS	NS	NS
MW-12	5	5	NS	NS	NS	NS	NS	NS	NS	4700	NS	NS	NS	NS	NS
MW-14	5	5	NS	NS	NS	NS	NS	NS	NS	350	NS	NS	NS	NS	NS
MW-15	5	5	NS	NS	NS	NS	NS	NS	NS	1000	NS	NS	NS	NS	NS
MW-27D	5	5	NS	NS	NS	NS	NS	NS	NS	NS	55	NS	77	NS	NS
MW-33S	5	5	NS	NS	NS	NS	22000	21000	22000	NS	23000	NS	35000	NS	NS
MW-41S	5	5	NS	NS	NS	NS	NS	NS	NS	NS	220	NS	700	NS	NS
MW-53	5	5	NS	NS	NS	NS	NS	NS	NS	5.3	NS	ND	2.5	NS	NS
MW-55	5	5	NS	NS	NS	NS	NS	18	NS	9.5	NS	NS	15	NS	NS
MW-59	5	5	NS	NS	NS	NS	NS	20	NS	7.4	NS	NS	NS	NS	NS
MW-61	5	5	NS	NS	NS	NS	13	NS	NS	NS	5.4	NS	6.6	NS	NS
MW-63	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	72	NS	NS
MW-72	5	5	NS	NS	NS	NS	NS	NS	NS	530	790	1900	1100	NS	NS
MW-74	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	11	NS	NS	NS
MW-75	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	21	NS	NS	NS
MW-76	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	5.2	NS	NS	NS
MW-91	5	5	NS	NS	NS	NS	8.6	NS	NS	8.4	NS	7.6	NS	NS	NS
MW-120	5	5	NS	NS	NS	NS	NS	NS	NS	NS	10.0	NS	8.7	NS	NS

All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.

DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

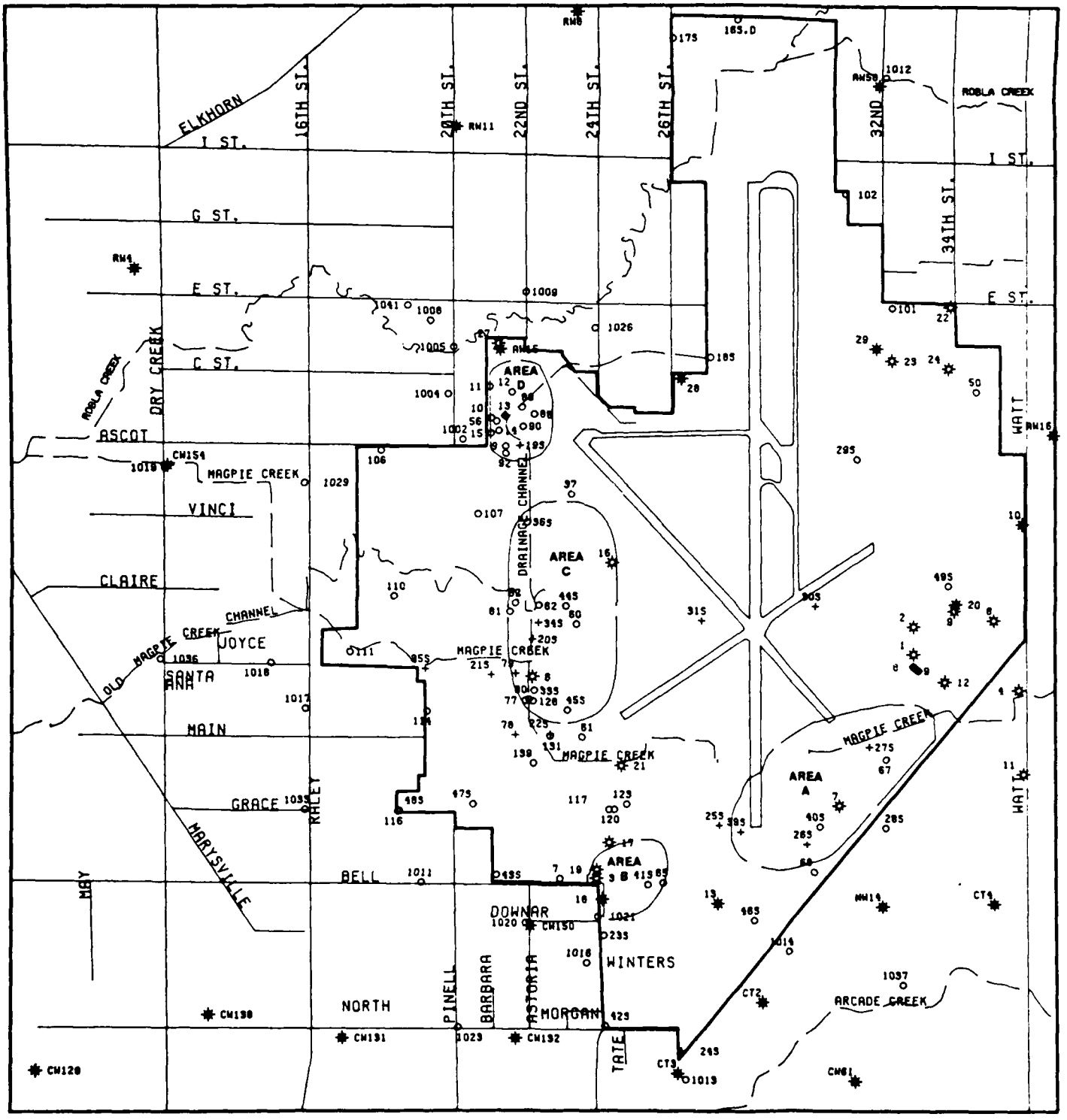
APPENDIX A-3. (continued)

Analyte Name / Well Number	DHS Action Level	U.S. EPA Primary MCL	Round 1 1985 6/85	Round 2 1985 11-12/85	Round 3 1986 2-4/86	4th Qtr. 1986 9-12/86	1st Qtr. 1987 1-3/87	2nd Qtr. 1987 4-6/87	3rd Qtr. 1987 7-9/87	4th Qtr. 1987 9-12/87	1st Qtr. 1988 1-3/88	2nd Qtr. 1988 4-6/88	3rd Qtr. 1988 7-9/88	4th Qtr. 1988 10-12/88	1st Qtr. 1989 1-3/89
Trichloroethene by Method 8240															
MW-12S	5	5	NS	NS	NS	NS	21000	25000	NS	NS	30000	NS	32000	NS	NS
MW-12S	5	5	NS	NS	NS	NS	7.5	NS	NS	NS	23	NS	200	NS	NS
MW-13S	5	5	NS	NS	NS	NS	48	49	56	NS	66	NS	76	NS	NS
MW-13S	5	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	430	NS	NS
MW-1005	5	5	NS	NS	NS	NS	NS	35	NS	NS	NS	NS	NS	NS	NS
MW-1022	5	5	NS	NS	NS	NS	NS	NS	NS	6.6	NS	NS	NS	NS	NS
Tetrachloroethene by Method 8240															
MW-41S	4	NE	NS	NS	NS	NS	NS	NS	NS	NS	5.5	NS	27	NS	NS
MW-55	4	NE	NS	NS	NS	NS	NS	ND	NS	13	NS	NS	ND	NS	NS
Benzene by Method 8240															
MW-54	.7	5	NS	NS	NS	NS	NS	2.1B	NS	ND	NS	ND	NS	NS	NS
MW-102	.7	5	NS	NS	NS	NS	NS	NS	5.2B	NS	NS	NS	NS	NS	NS
Cadmium by Method 6010															
MW-33S	NE	10	NS	NS	NS	NS	ND	10	ND	ND	ND	NS	NS	NS	ND
MW-36S	NE	10	NS	NS	ND	41	NS	30	NS	NS	NS	NS	ND	ND	NS
MW-12S	NE	10	NS	NS	NS	NS	ND	50	NS	ND	ND	NS	NS	NS	ND
MW-13S	NE	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	33
Chromium by Method 6010															
MW-12	NE	50	NS	NS	NS	NS	NS	NS	NS	60	NS	10	21	NS	11
MW-31S	NE	50	NS	NS	61	NS	NS	NS	NS	NS	NS	ND	NS	NS	NS
MW-44S	NE	50	NS	NS	ND	NS	50	NS	NS	NS	NS	53	48	38	55
MW-101	NE	50	NS	38	ND	NS	NS	NS	62	NS	NS	16	NS	NS	NS
MW-1018	NE	50	NS	66	72	NS	NS	NS	NS	10	NS	9	13	11	NS
MW-1019	NE	50	NS	250	ND	NS	NS	NS	NS	NS	ND	NS	NS	9	8
Lead by Method 6010															
MW-12	NE	50	NS	NS	NS	NS	NS	NS	NS	60	NS	ND	ND	NS	ND
MW-1001	NE	50	NS	2	60	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1012	NE	50	NS	240	9	NS	NS	NS	ND	NS	NS	NS	ND	ND	NS
Mercury by Method 200.7															
MW-44S	NE	2	NS	NS	ND	NS	2	NS	NS	NS	NS	ND	ND	NA	NA
Silver by Method 6010															
MW-1005	NE	50	NS	ND	ND	NS	NS	270	NS	NS	ND	NS	ND	ND	NS
Barium by Method 6010															
MW-36S	NE	1000	NS	NS	100	1000	NS	NA	NS	NS	NS	NS	NA	350	NS

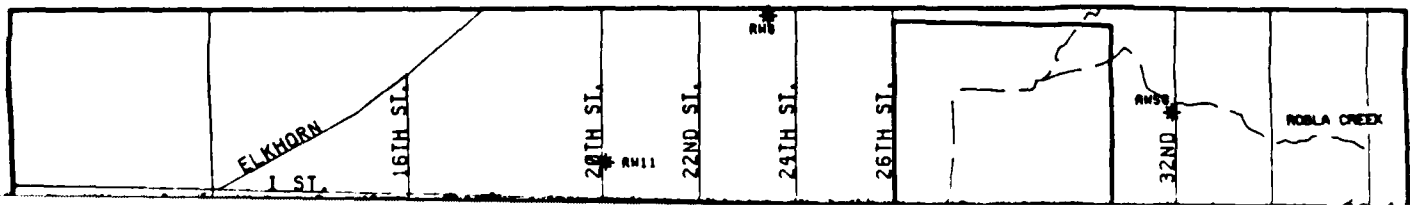
All Units are ug/l
MW = Monitoring Well
LOQ = Limit of quantitation
NE = Not established
P or PC = Identity previously confirmed
C = Analysis confirmed in second column analysis
NS = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.

DL = Diluted out of the confirmation run
NC = Result was not confirmed in second column analysis
ND = Nothing detected
NR = Not reported
NA = Not analyzed
B = Compound detected in laboratory blank - not edited

Shallow Zone Monitoring Wells

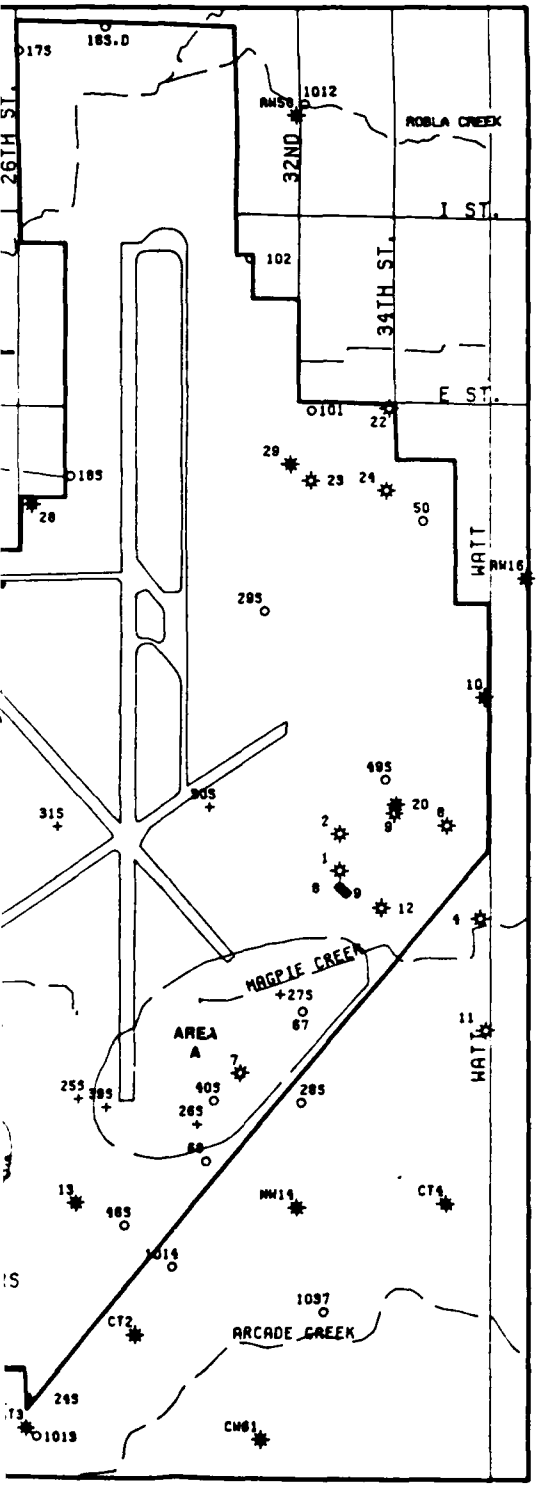


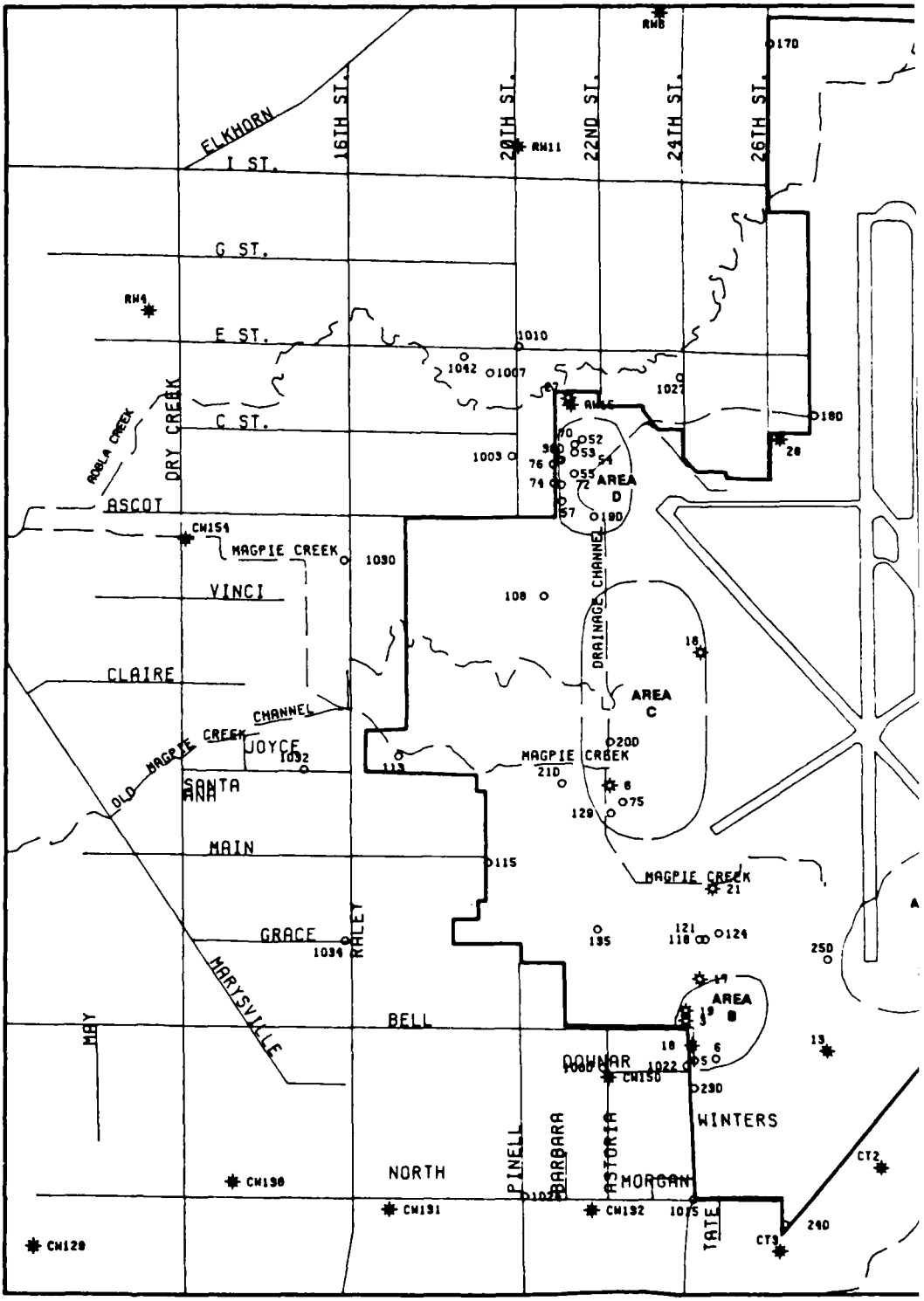
Deep "A" Zone Monitoring Wells



Wells

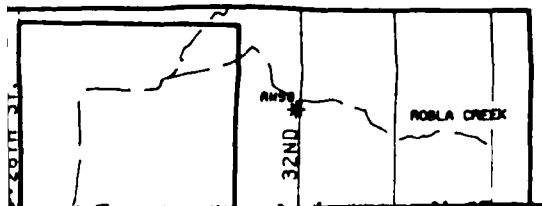
Middle Zone Monitoring Wells

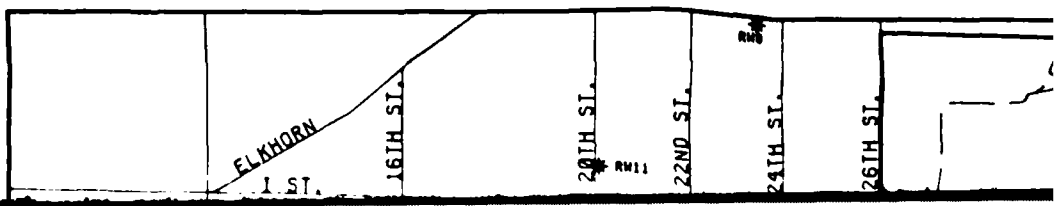




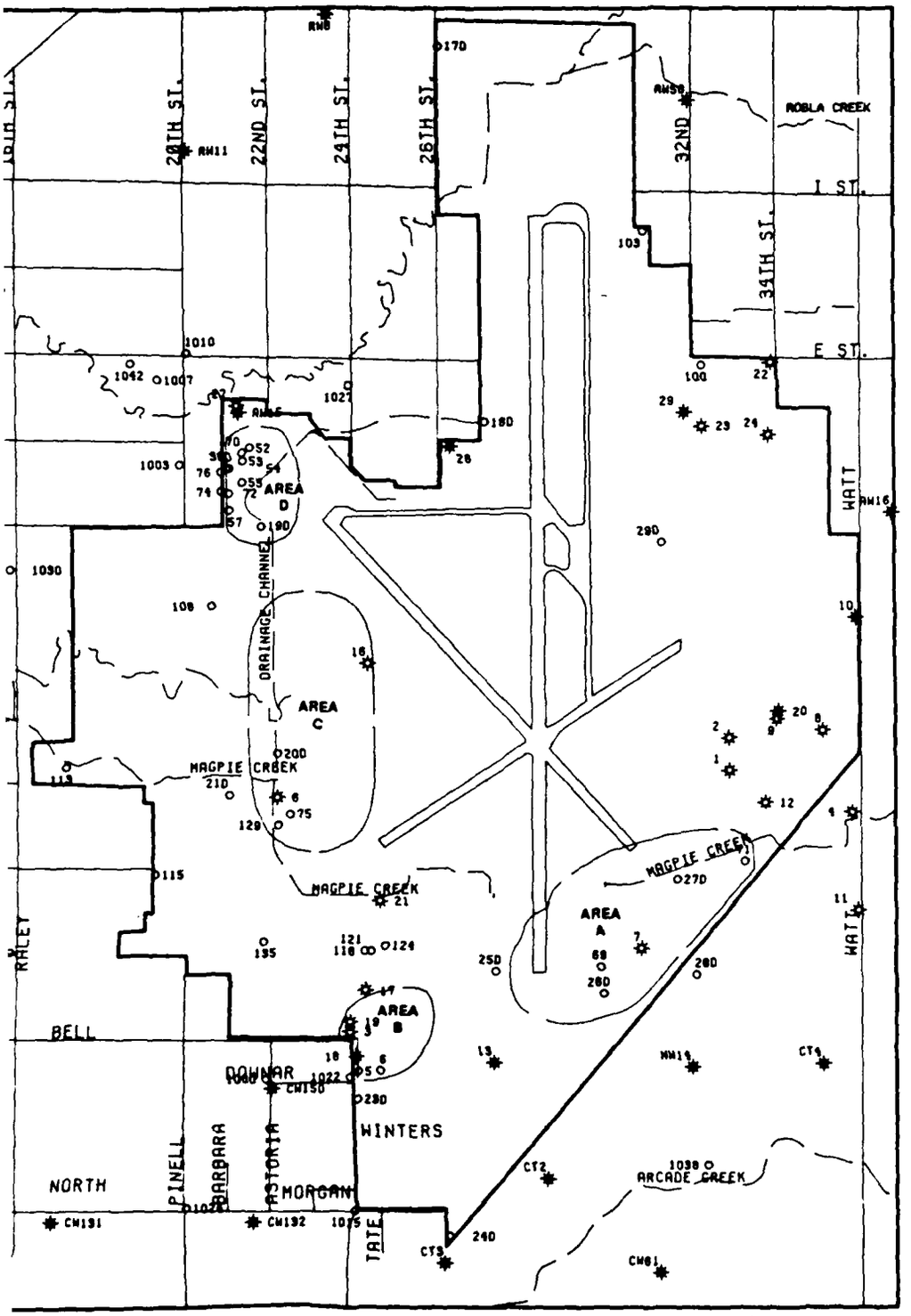
Wells

Deep "B" Zone Monitoring Wells & Extraction

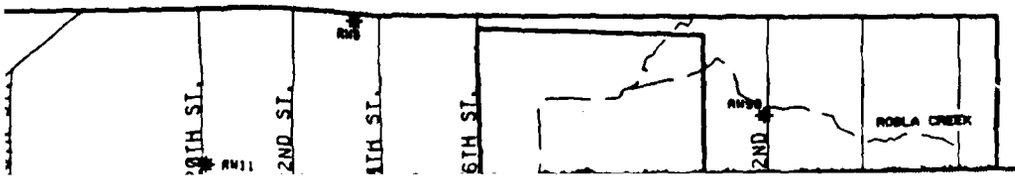




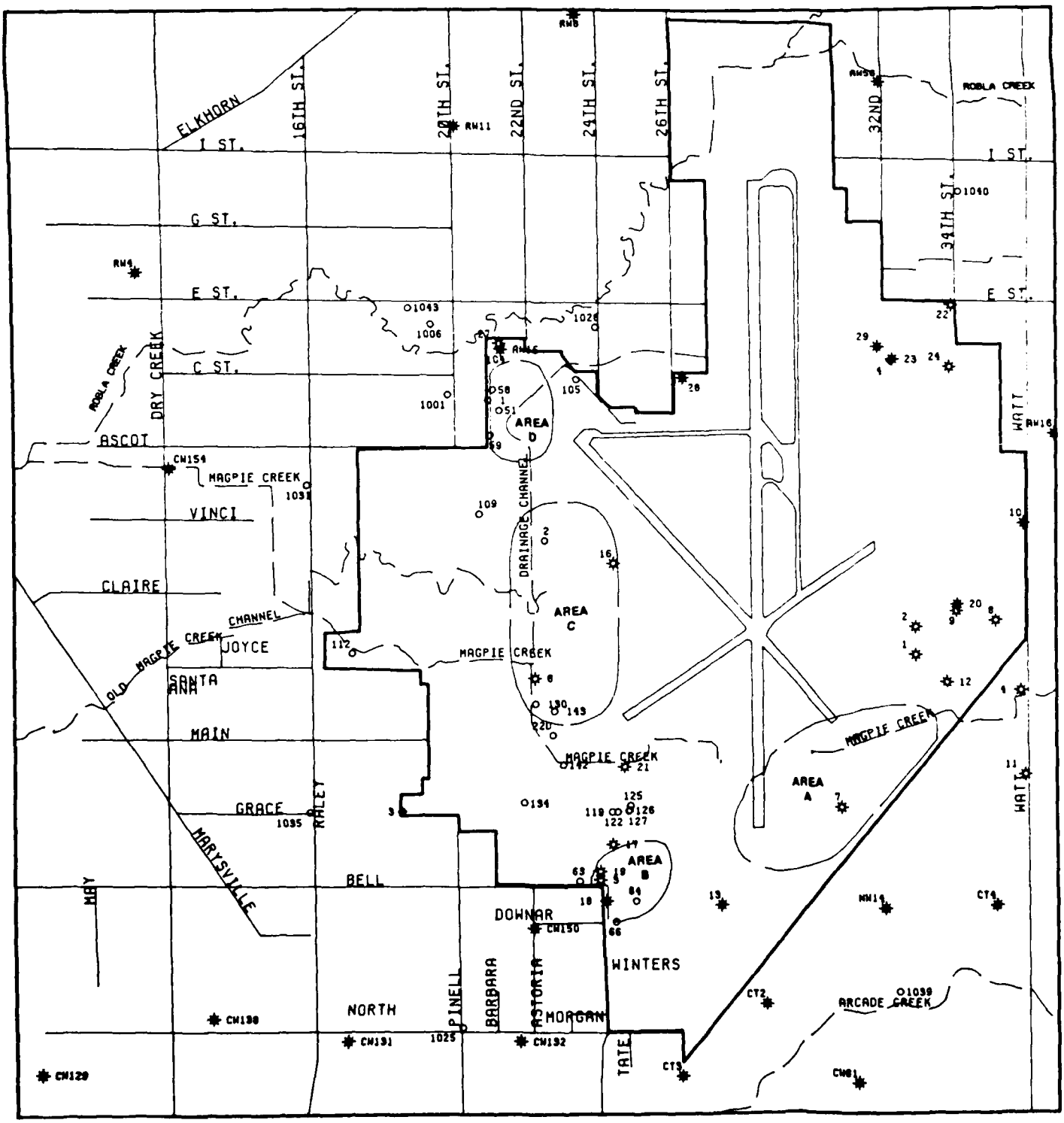
Middle Zone Monitoring Wells



3" Zone Monitoring Wells & Extraction Wells

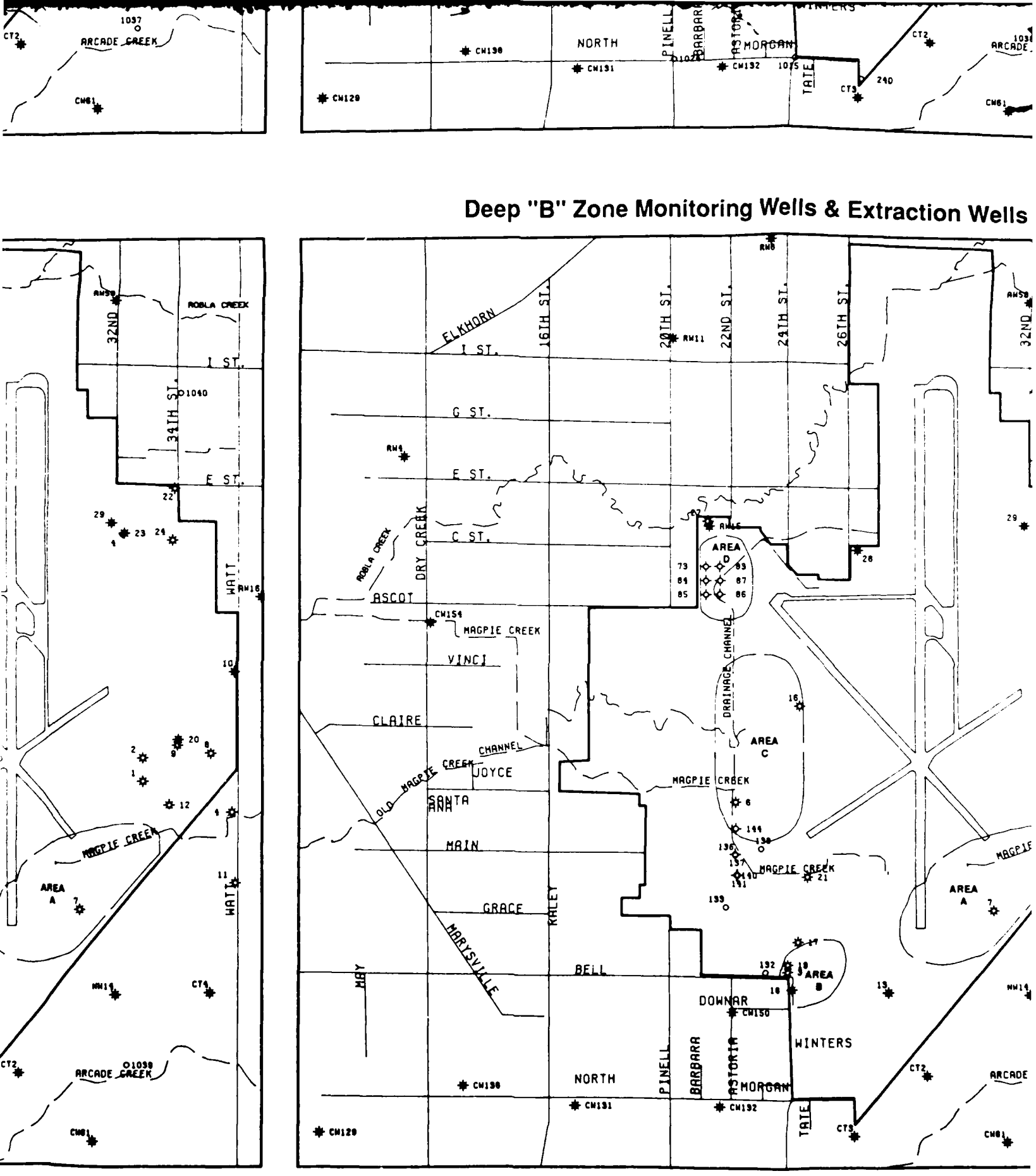


Deep "A" Zone Monitoring Wells



(3)

Deep "B" Zone Monitoring Wells & Extraction Wells



p "B" Zone Monitoring Wells & Extraction Wells

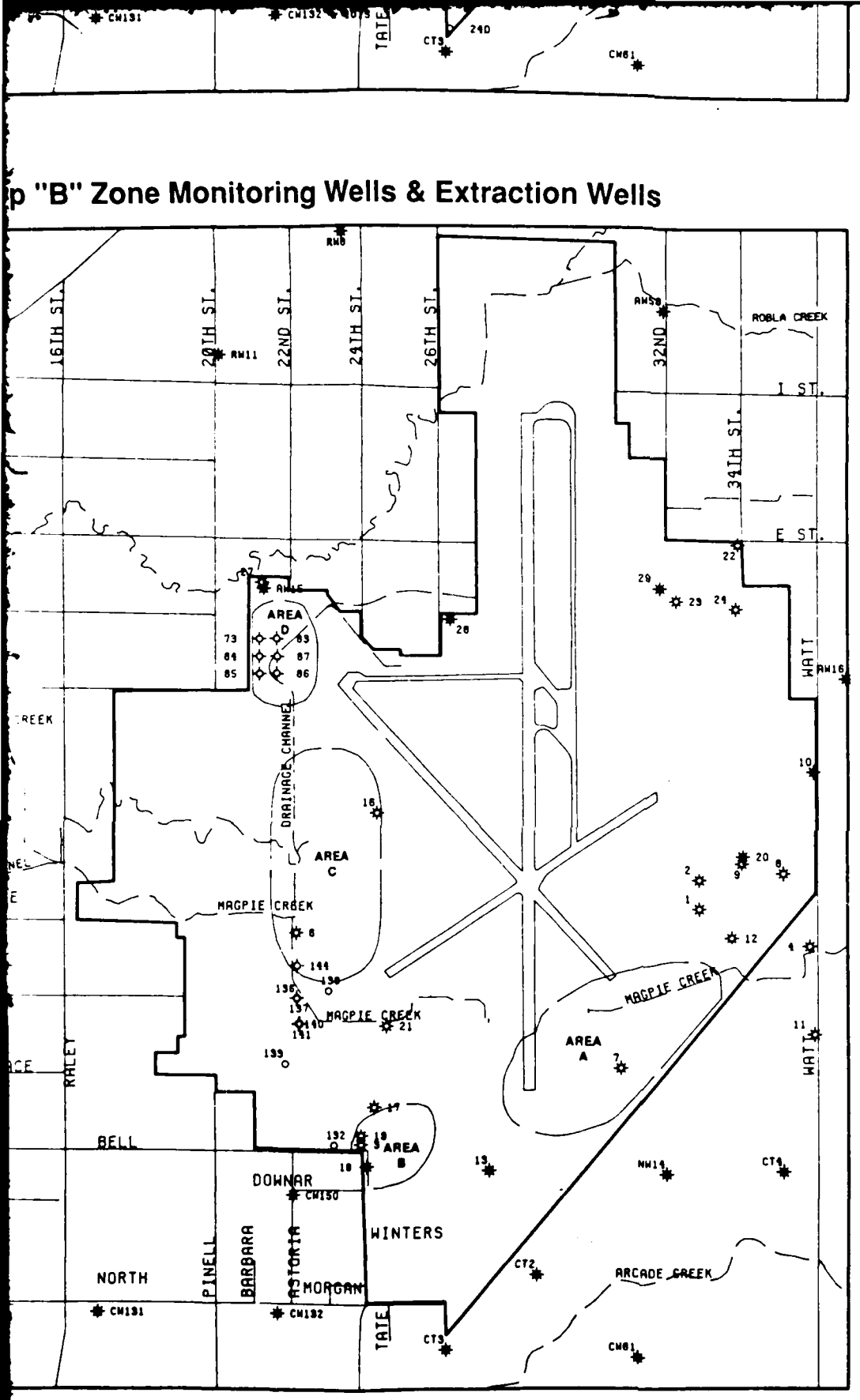


PLATE 1.
Locations of Wells

McCLELLAN AFB
Groundwater Sampling
& Analysis Program

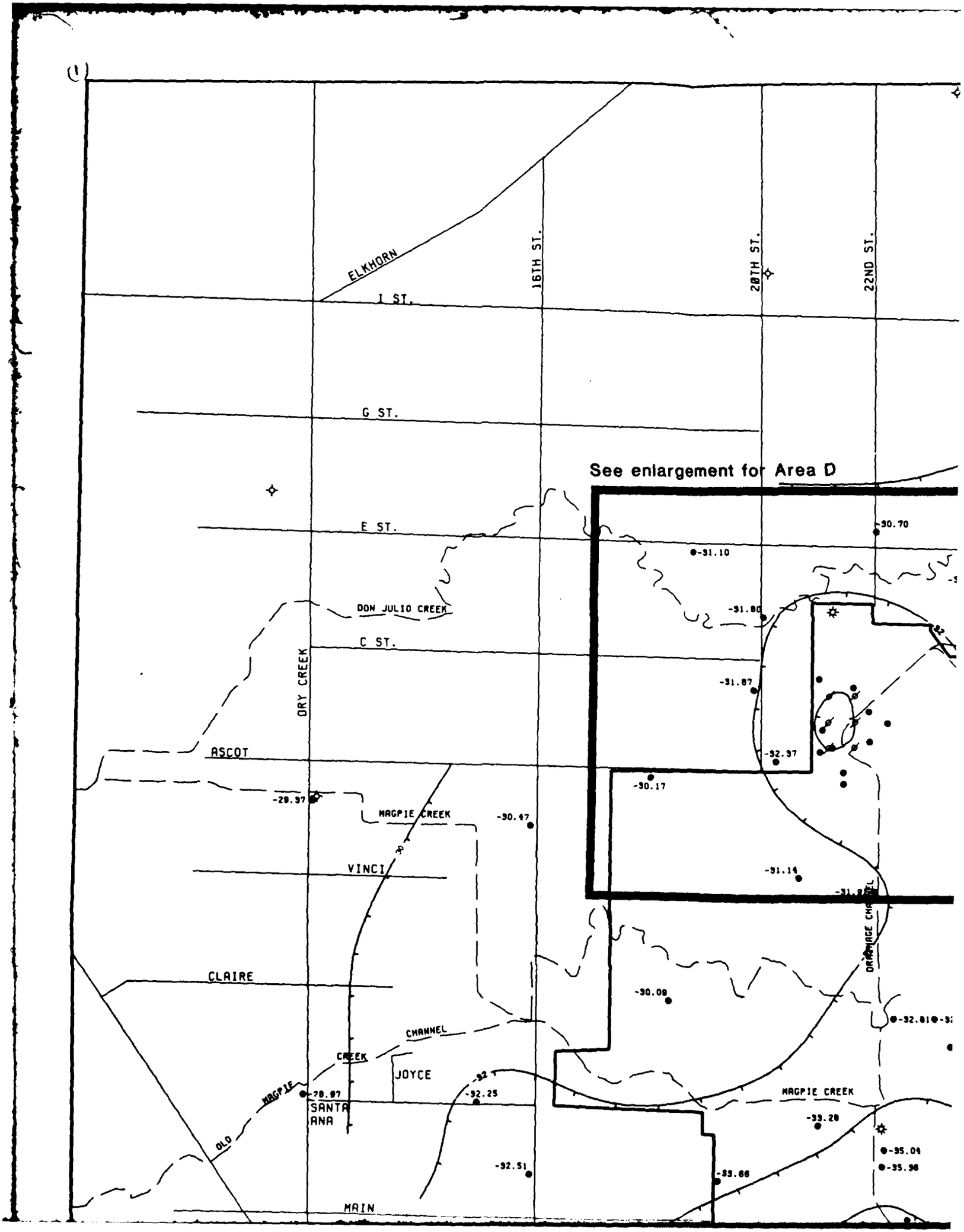
LEGEND:

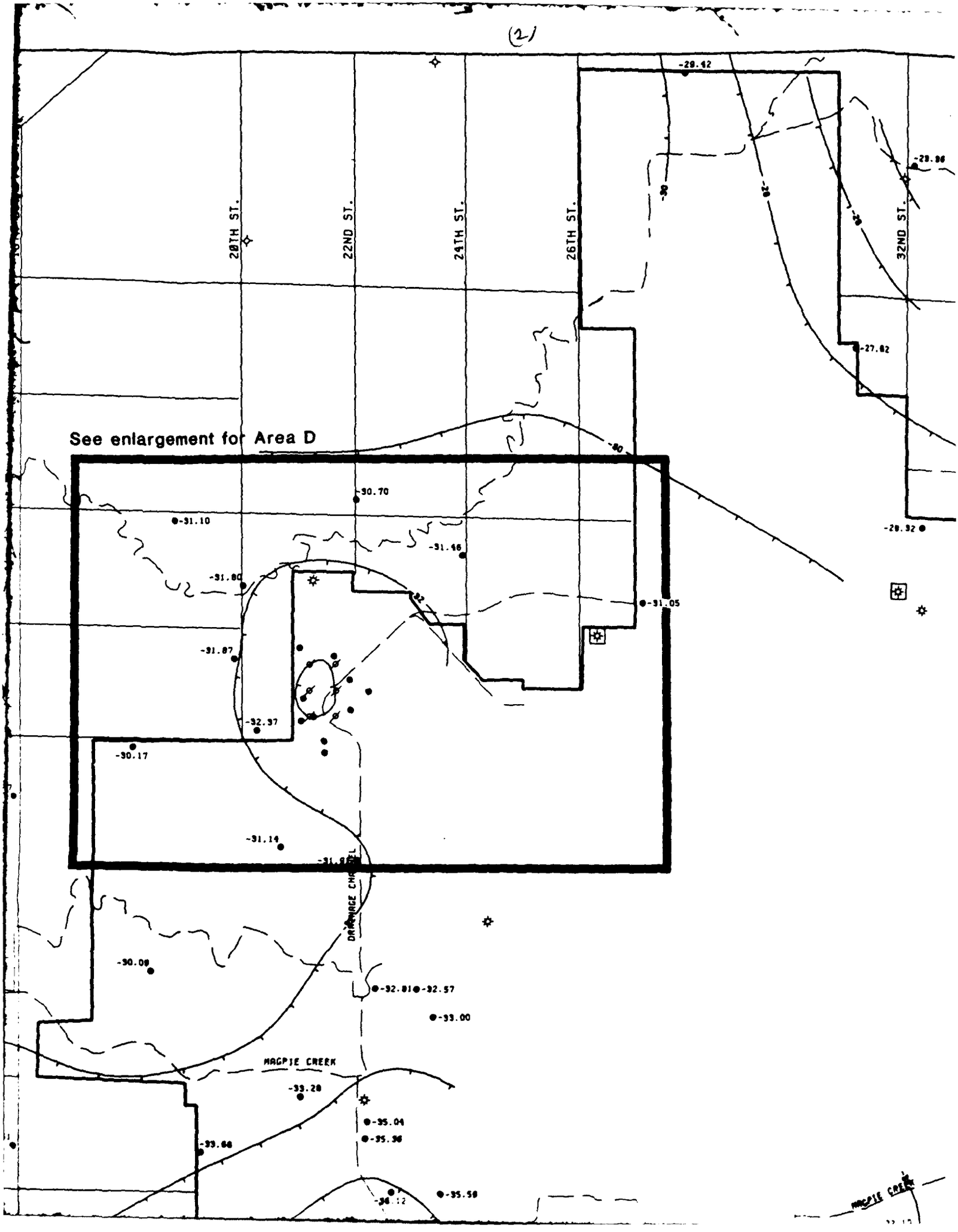
- McClellan AFB Boundary
- Boundaries of Past Disposal / Storage Sites (AREA)
- Streams
- Monitoring Well
- Extraction Well
- Dry Well
- Active Water Supply Well
- Inactive Water Supply Well

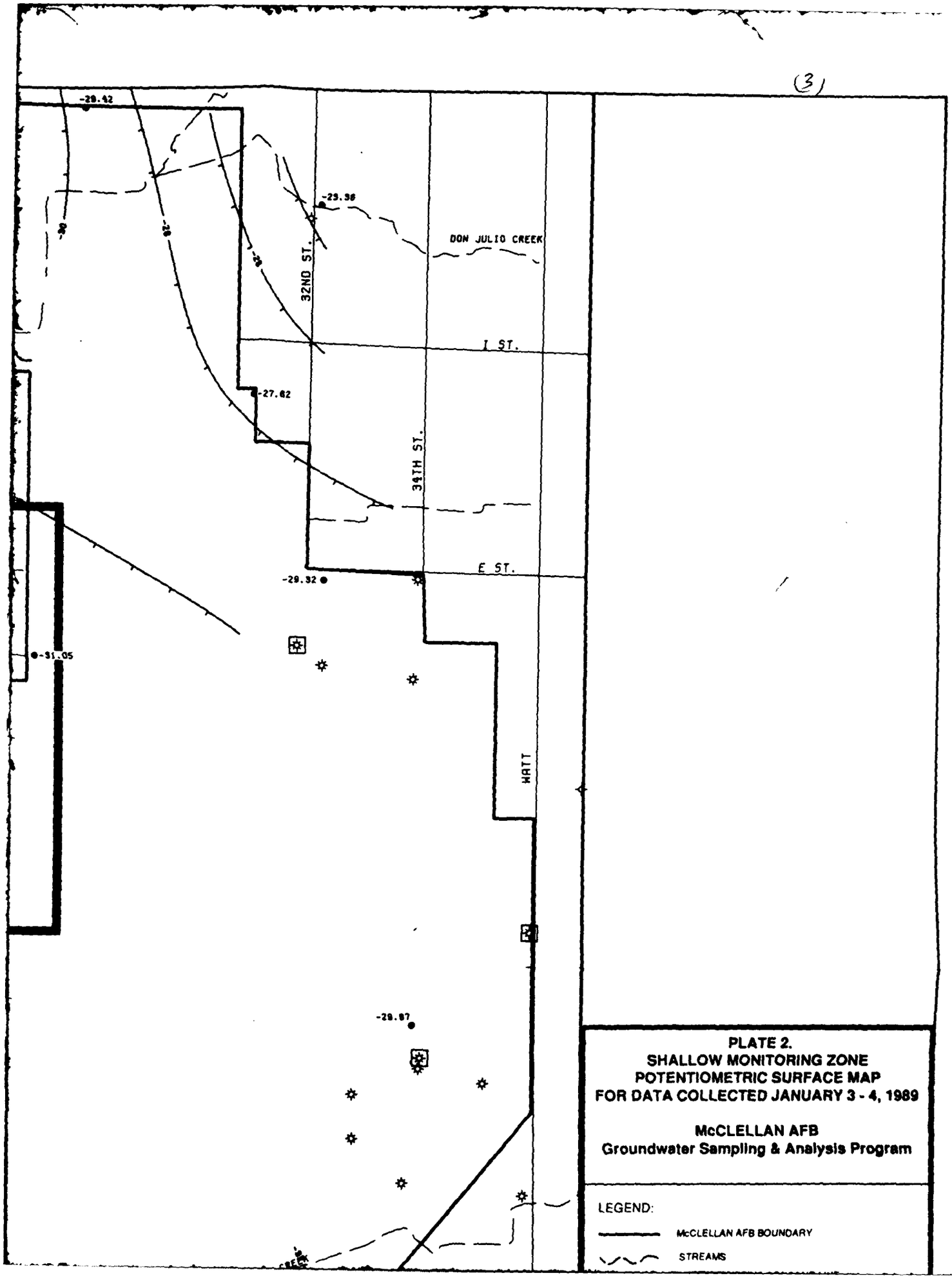
N

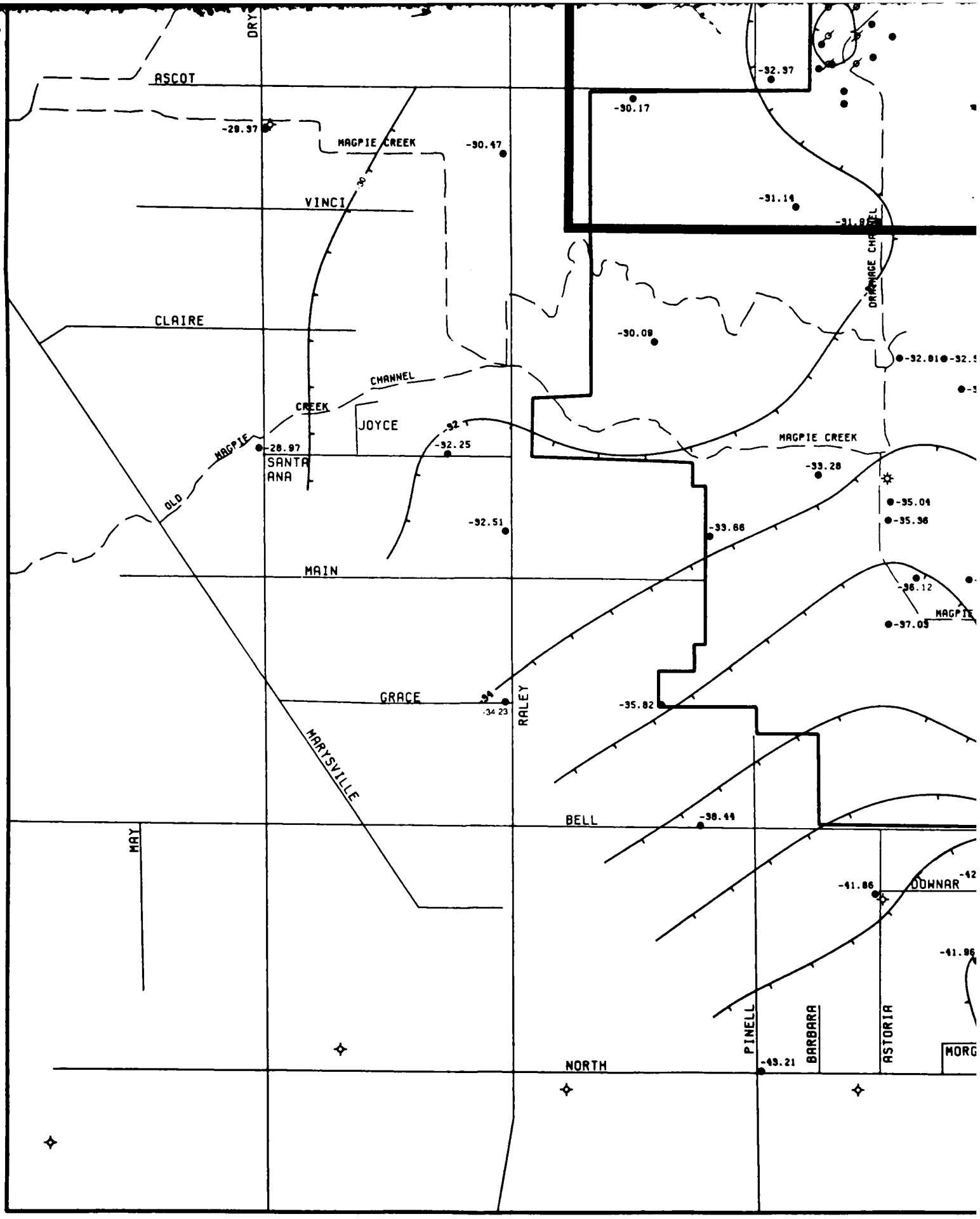
0 1000 2000
SCALE IN FEET

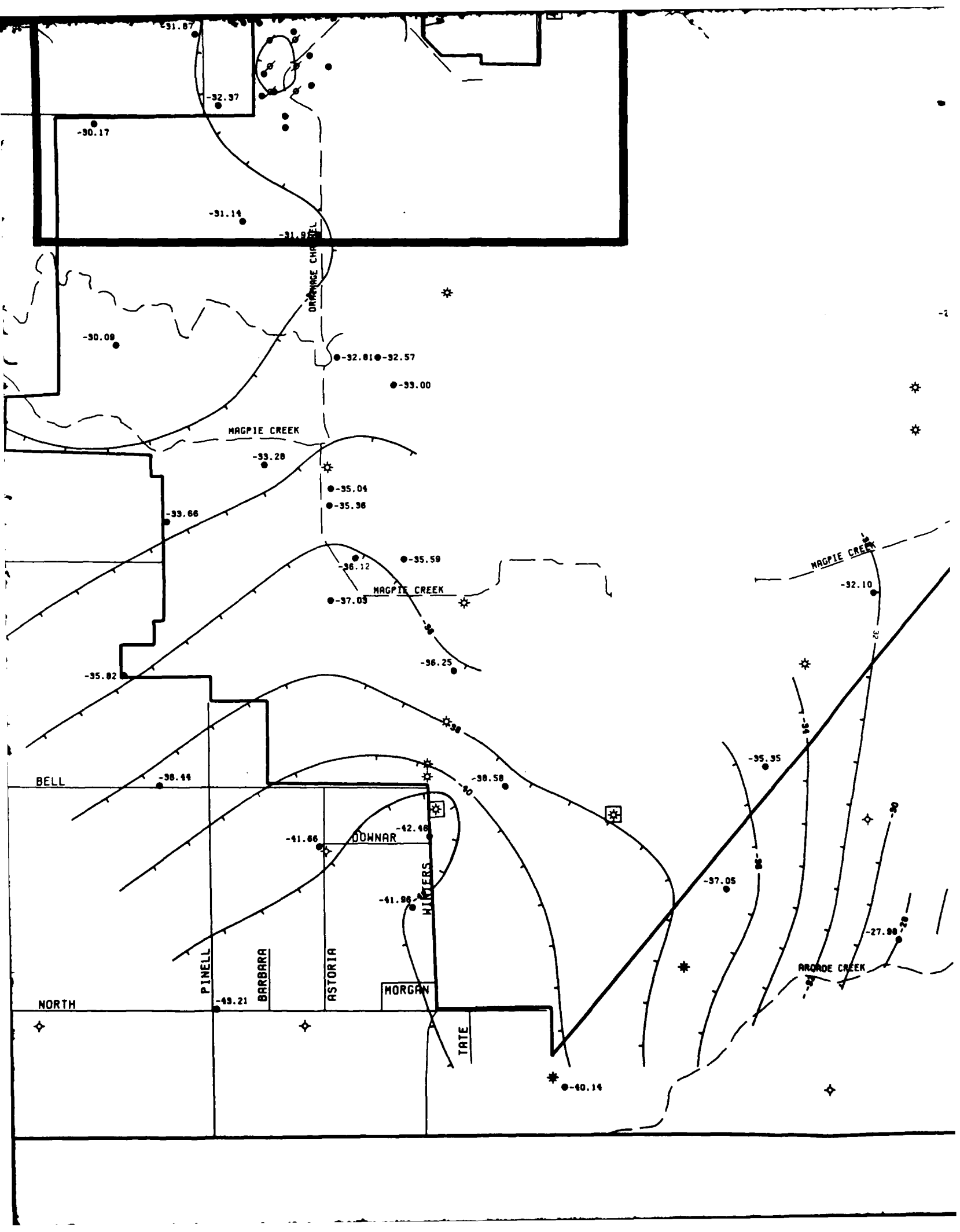
RADIAN CORPORATION


ELKHORN
I ST.
16TH ST.
20TH ST.
22ND ST.
G ST.
See enlargement for Area D
E ST.
-30.70
-31.10
-31.80
DON JULIO CREEK
C ST.
DRY CREEK
-31.87
ASCOT
-32.37
-30.17
-29.37
MAGPIE CREEK
-30.47
VINCI
-31.14
DRAINAGE CHANNEL
CLAIRE
-30.08
-32.81
CHANNEL
CREEK
JOYCE
-32
-28.87
-32.25
MAGPIE
SANTA ANA
MAGPIE CREEK
-33.28
OLD
-35.04
-35.98
-32.51
-33.66
MAIN


20TH ST.
22ND ST.
24TH ST.
26TH ST.
32ND ST.
See enlargement for Area D
-29.42
-28.86
-27.82
-28.92
-30.70
-31.10
-31.46
-31.80
-31.05
-31.87
-32.37
-30.17
-31.14
-31.91
DRAINAGE CHANNEL
-30.09
-32.81
-32.57
-33.00
MAGPIE CREEK
-33.28
-35.04
-35.36
-33.68
-35.58
-36.12
MAGPIE CREEK


(3)
-28.42
-29.98
DON JULIO CREEK
32ND ST.
I ST.
-27.82
34TH ST.
E ST.
-29.32
-31.05
HATT
-29.87
PLATE 2.
SHALLOW MONITORING ZONE
POTENTIOMETRIC SURFACE MAP
FOR DATA COLLECTED JANUARY 3 - 4, 1989
McCLELLAN AFB
Groundwater Sampling & Analysis Program
LEGEND:
McCLELLAN AFB BOUNDARY
STREAMS


ASCOT
VINCI
CLAIRE
MAIN
GRACE
MAY
BELL
NORTH
DRY
MAGPIE CREEK
CHANNEL
CREEK
JOYCE
SANTA ANA
OLD MAGPIE
MARYSVILLE
RALEY
PINELL
BARBARA
ASTORIA
DOWNAR
-28.97
-30.47
-30.17
-32.97
-31.14
-30.08
-32.01
-32.25
-32.51
-33.28
-33.66
-35.04
-35.36
-36.12
-37.05
-35.82
-34.23
-38.44
-41.86
-43.21


-31.87
-32.37
-30.17
-31.14
-31.8
ORANGE CHANNEL
-30.09
-32.81
-32.57
-33.00
MAGPIE CREEK
-33.28
-35.04
-35.36
-33.66
-36.12
-35.59
MAGPIE CREEK
-37.09
-36.25
-35.82
-32.10
MAGPIE CREEK
-35.95
BELL
-38.44
-38.58
-42.46
-41.66
DOWNAR
-37.05
-41.86
WINTERS
-27.88
ARONDE CREEK
PINELL
BARBARA
ASTORIA
MORGAN
NORTH
-49.21
TATE
-40.14

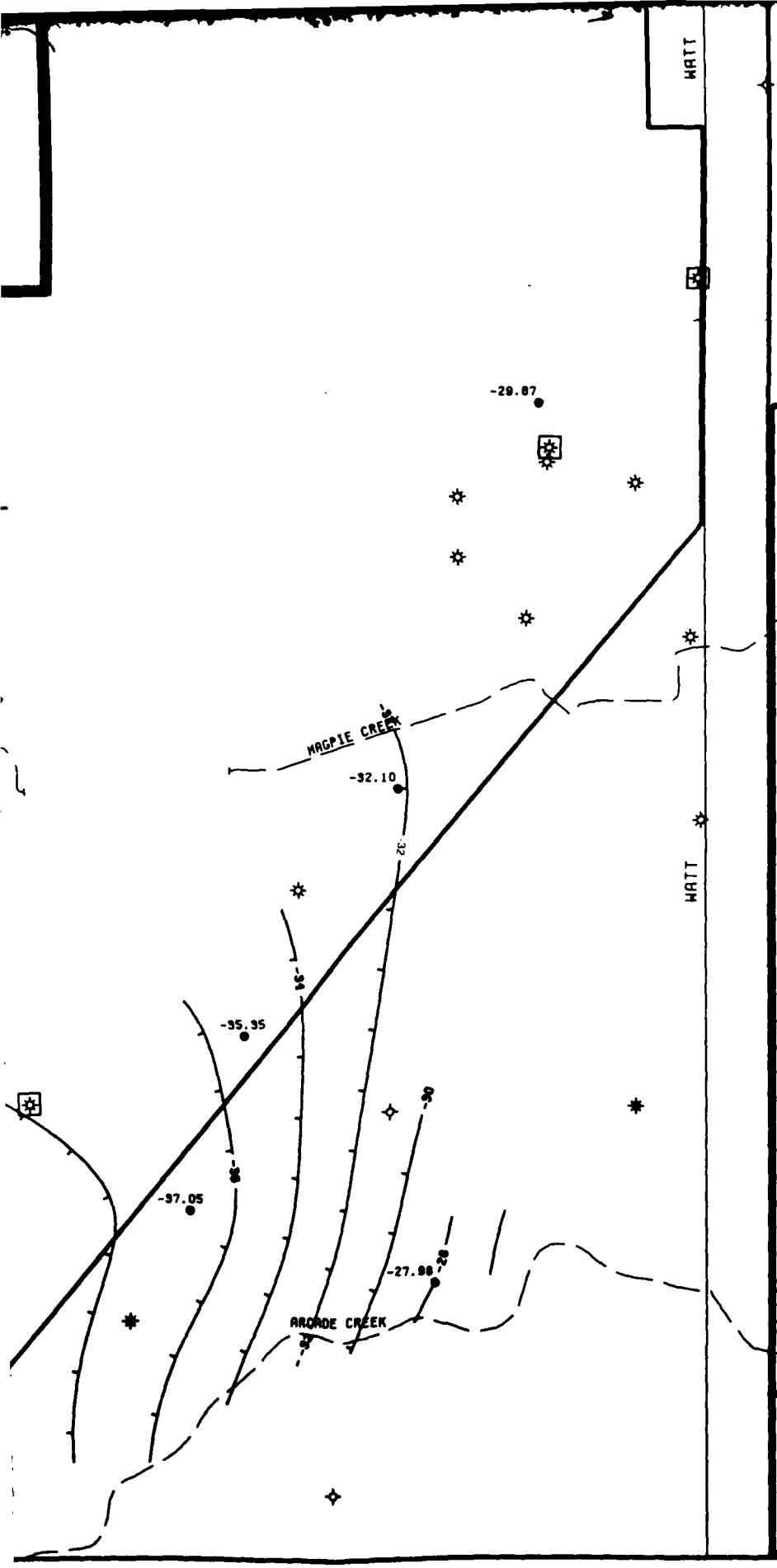


PLATE 2.
SHALLOW MONITORING ZONE
POTENTIOMETRIC SURFACE MAP
FOR DATA COLLECTED JANUARY 3 - 4, 1989

McCLELLAN AFB
Groundwater Sampling & Analysis Program

LEGEND:

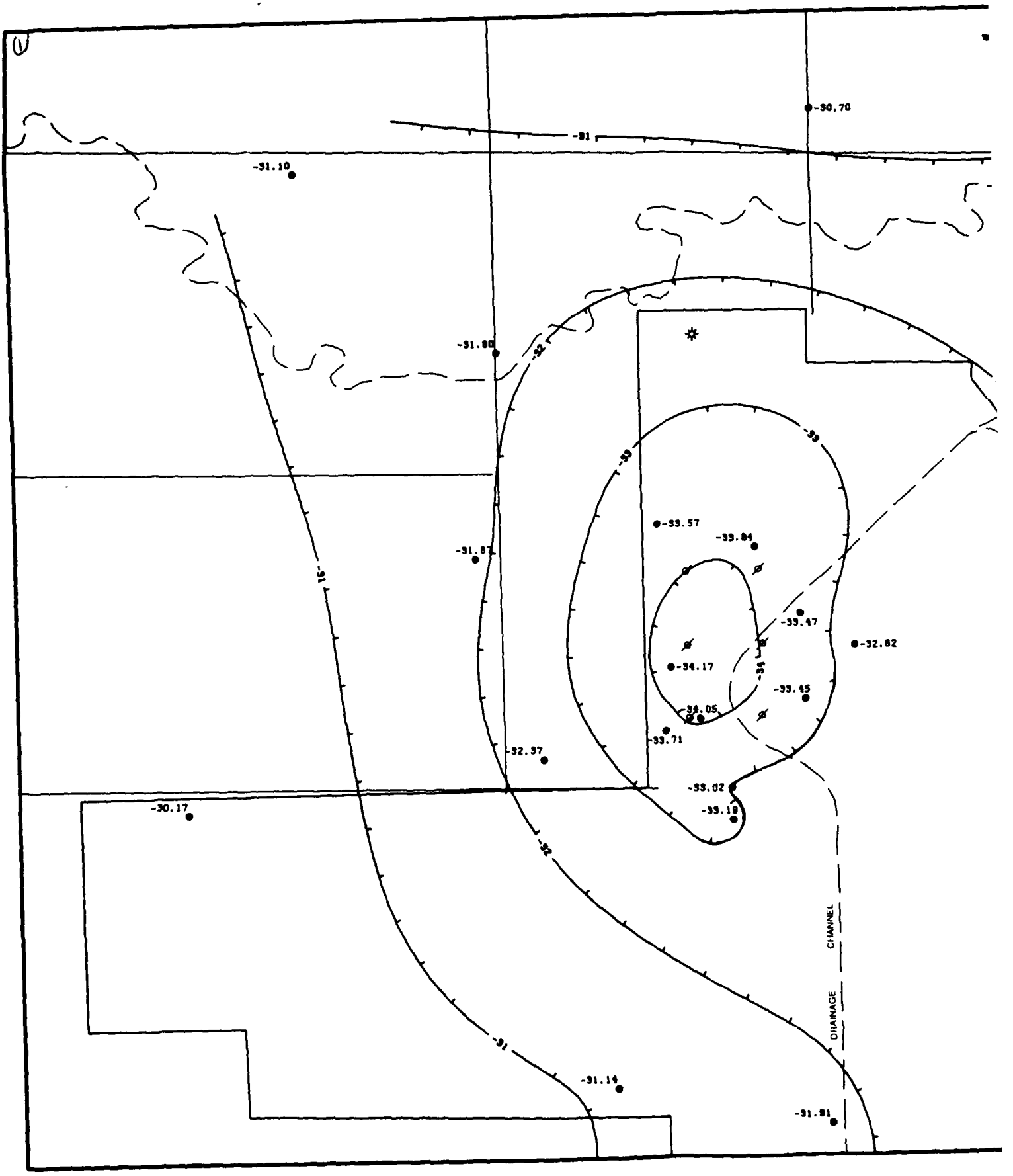
- McCLELLAN AFB BOUNDARY
- STREAMS
- 30 — POTENTIOMETRIC CONTOUR LINE AND ELEVATION (FT MSL)
  (NOTE Hash marks indicate groundwater flow direction.)
- SHALLOW ZONE MONITORING WELL
- INACTIVE BASE PRODUCTION WELL
- ACTIVE BASE PRODUCTION WELL
- CITY WELL
- CALTRANS WELL
- EXTRACTION WELL

N

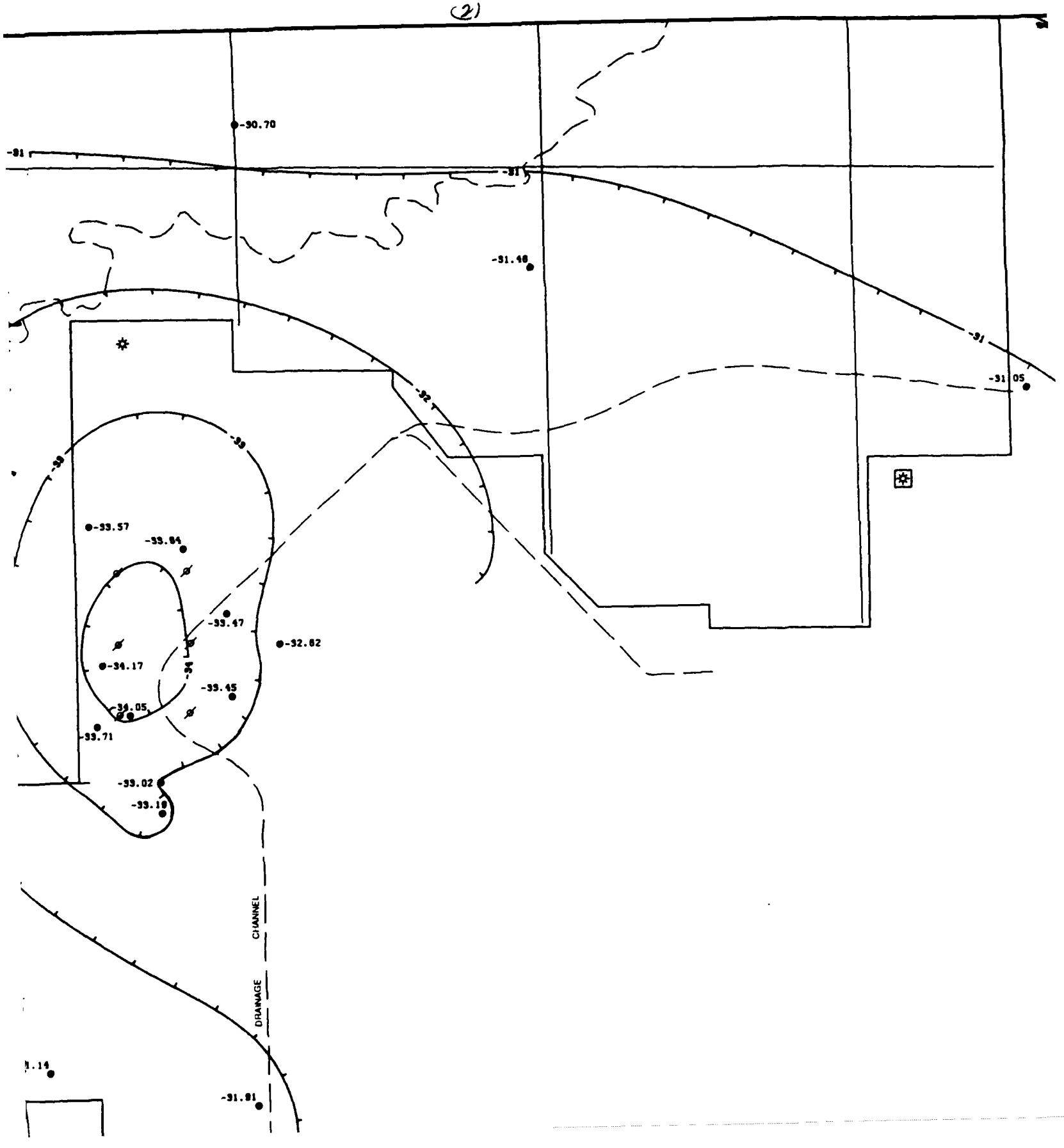
0 500 1000
SCALE IN FEET

GENERATED BY:	James E Hunt	DATE: 1/24/89
PEER REVIEW:	Clyde P. Thompson	DATE: 1/24/89
PROJECT REVIEW:	Deena A Stanley	DATE: 1/24/89

RADIAN CORPORATION


-90.70
-91
-91.10
-91.80
-92
-93
-93.57
-93.84
-91.87
-91
-93.47
-92.62
-94
-94.17
-93.45
-94.05
-93.71
-92.97
-93.02
-93.19
-30.17
-92
CHANNEL
DRAINAGE
-91
-91.14
-91.81

(2)


-90.70
-91
-91
-91.48
-91
-91.05
-92
-93
-93
-93.57
-93.84
-93.47
-32.82
-34.17
-34
-93.45
-34.05
-93.71
-93.02
-93.18
CHANNEL
DRAINAGE
-91.91

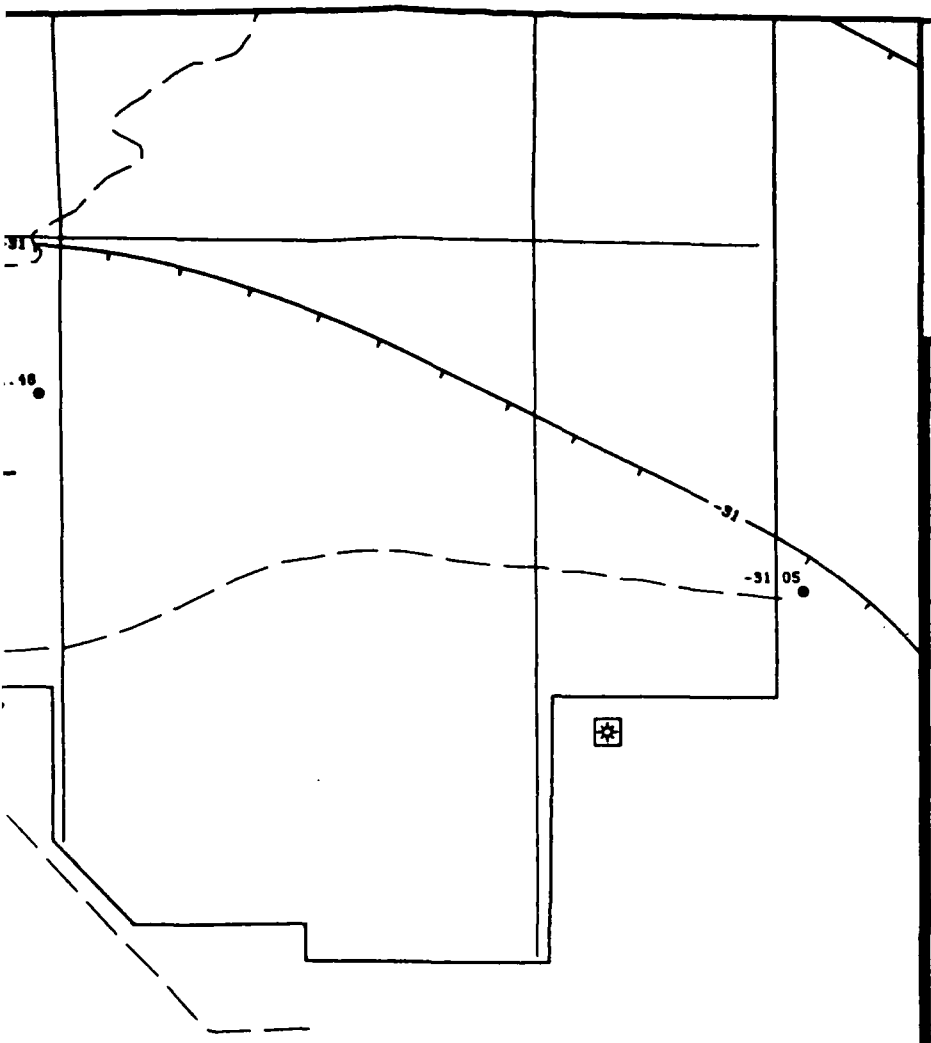


PLATE 3.
AREA D - SHALLOW MONITORING ZONE
POTENTIOMETRIC SURFACE MAP
FOR DATA COLLECTED JANUARY 3 - 4, 1989

McCLELLAN AFB
Groundwater Sampling & Analysis Program

LEGEND:

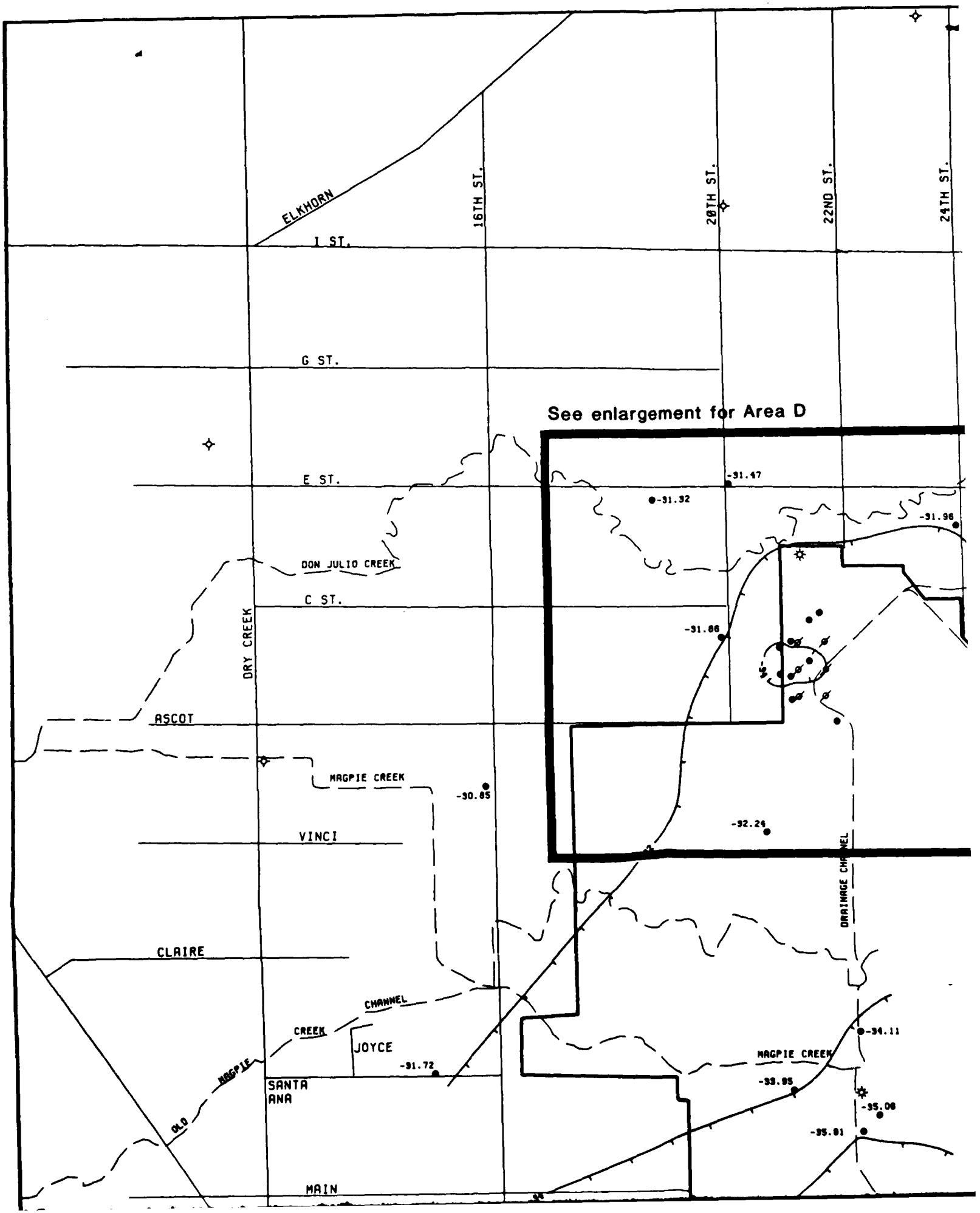
- McCLELLAN AFB BOUNDARY
- STREAMS
- 30 — POTENTIOMETRIC CONTOUR LINE AND ELEVATION (FT. MSL)
  (NOTE: Hash marks indicate groundwater flow direction.)
- SHALLOW ZONE MONITORING WELL
- INACTIVE BASE PRODUCTION WELL
- ACTIVE BASE PRODUCTION WELL
- CITY WELL
- CALTRANS WELL
- EXTRACTION WELL

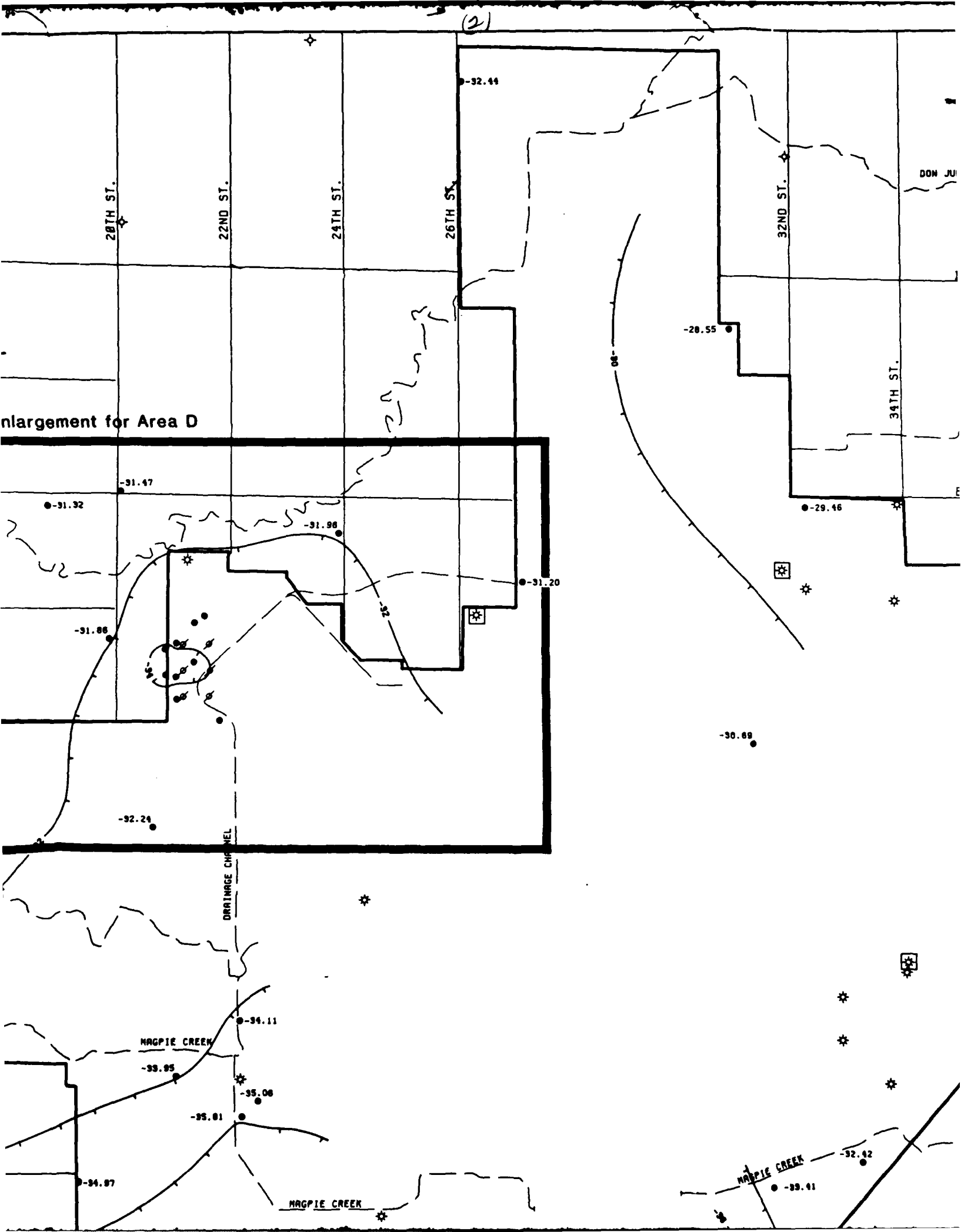
N

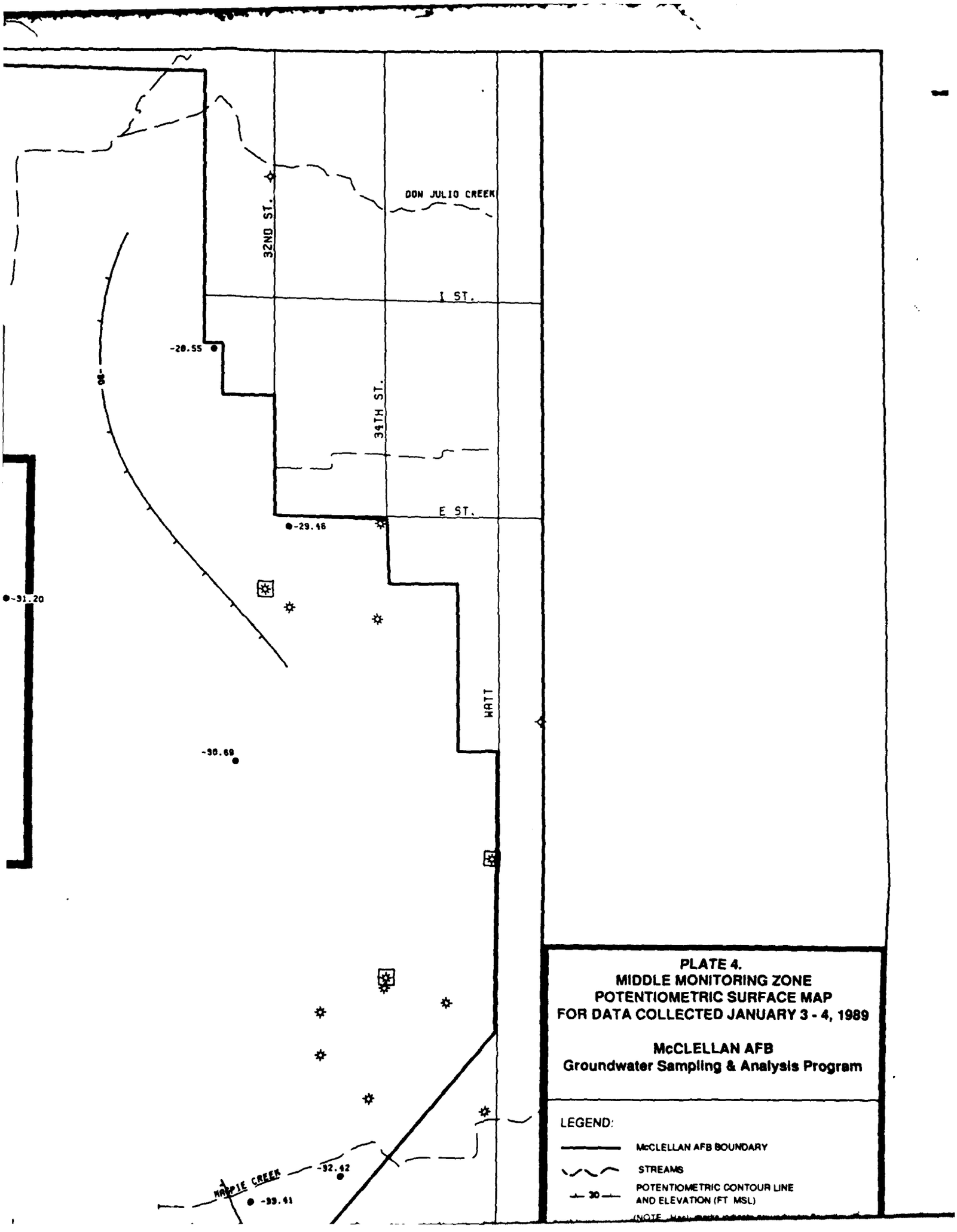
0 200 400
SCALE IN FEET

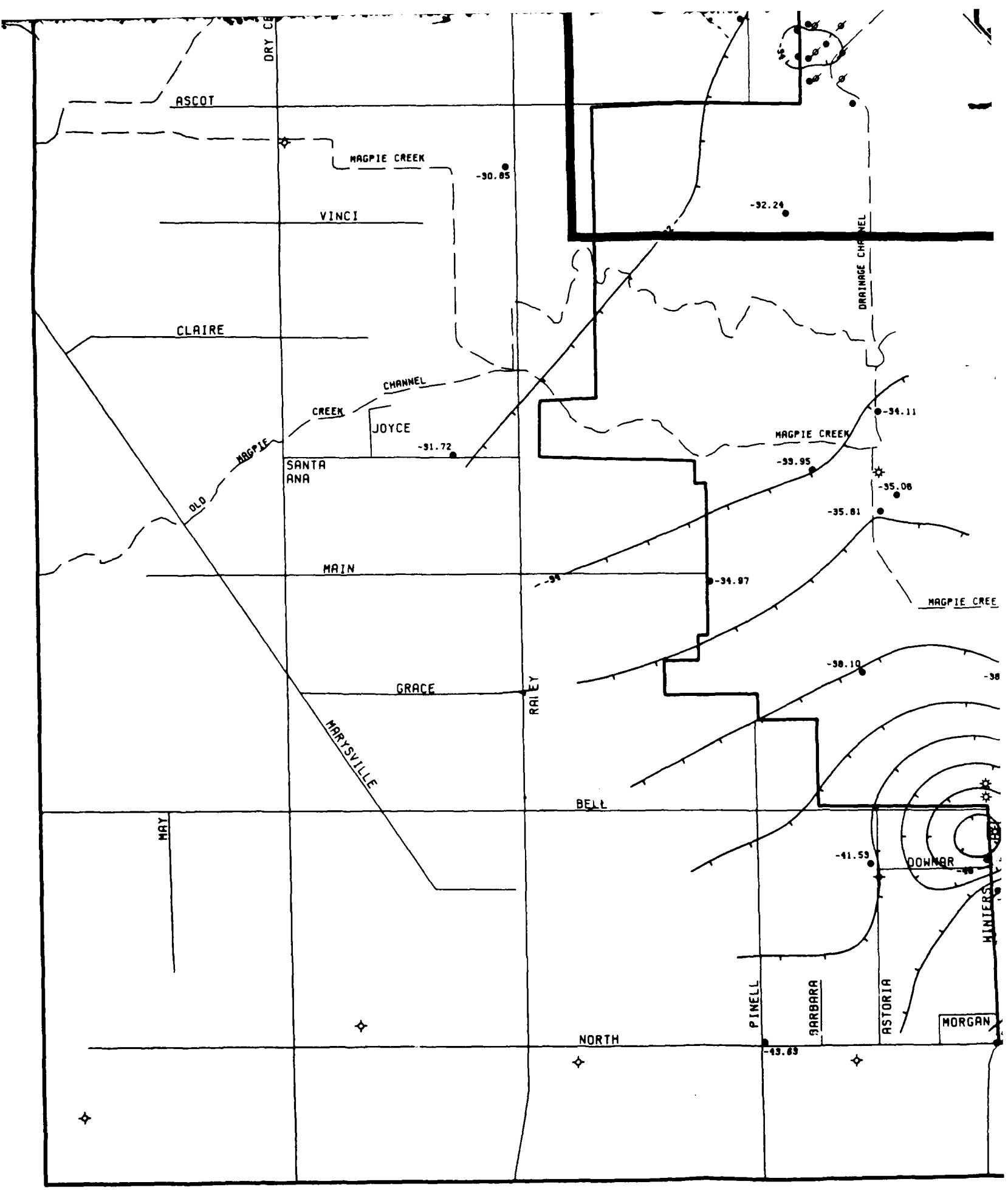
GENERATED BY: [signature] DATE: 1/24/89
PEER REVIEW: Tyler P. Hunsinger DATE: 1/24/89
PROJECT REVIEW: [signature] DATE: 1/24/89

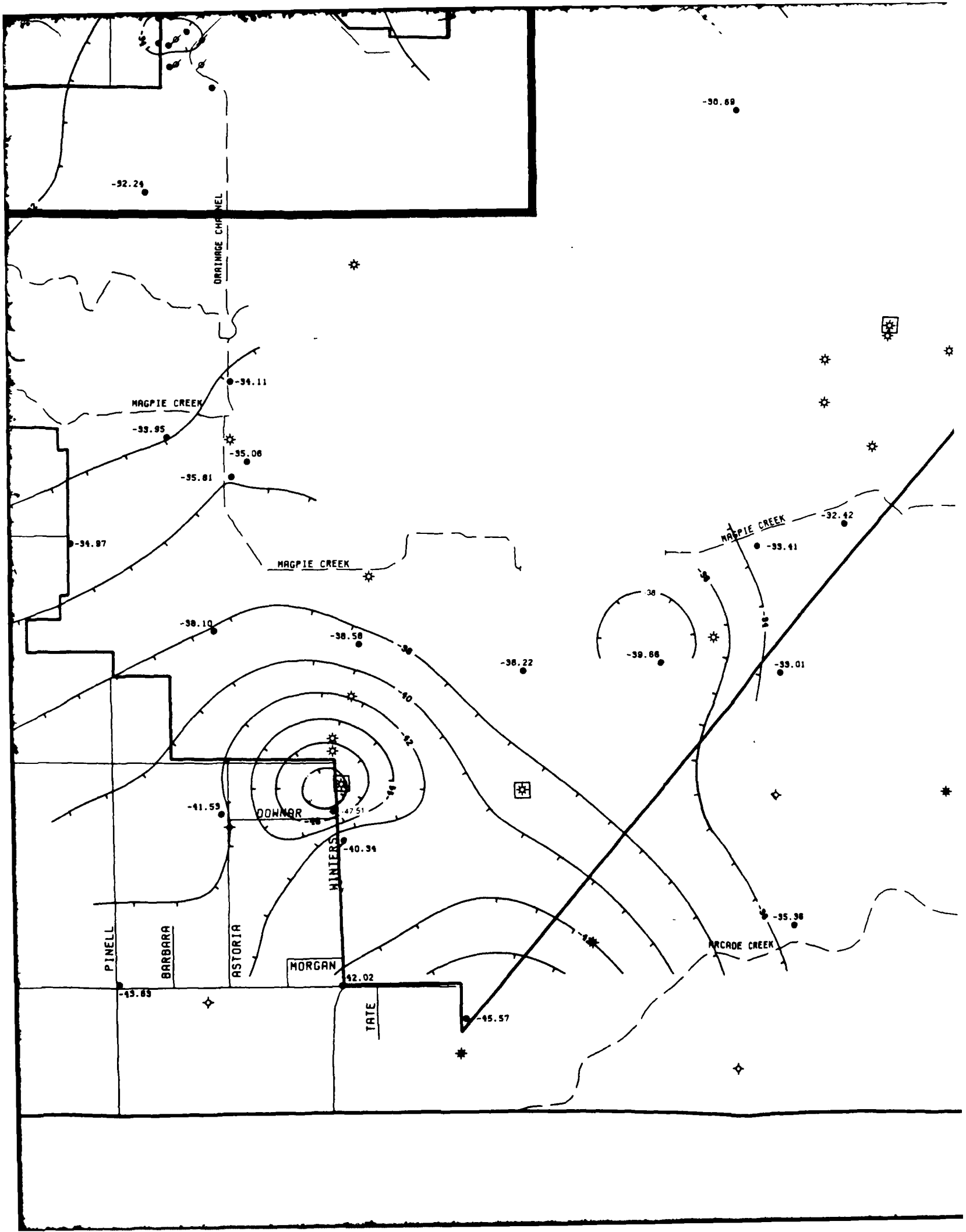
RADIAN CORPORATION


ELKHORN
I ST.
16TH ST.
20TH ST.
22ND ST.
24TH ST.
G ST.
See enlargement for Area D
E ST.
-31.47
-31.32
-31.96
DON JULIO CREEK
C ST.
DRY CREEK
-31.66
ASCOT
MAGPIE CREEK
-30.85
-32.24
VINCI
DRAINAGE CHANNEL
CLAIRE
CHANNEL
CREEK
JOYCE
-34.11
MAGPIE CREEK
-33.95
-91.72
SANTA ANA
OLD MAGPIE
-35.08
-35.81
MAIN


20TH ST.
22ND ST.
24TH ST.
26TH ST.
32ND ST.
34TH ST.
DON JU
-32.44
-28.55
-29.46
nlargement for Area D
-31.47
-31.92
-31.98
-31.20
-31.86
-30.69
-92.24
DRAINAGE CHANNEL
-34.11
MAGPIE CREEK
-33.95
-35.08
-35.81
-34.87
MAGPIE CREEK
-32.42
-33.41
MAGPIE CREEK


DON JULIO CREEK
32ND ST.
I ST.
34TH ST.
E ST.
WATT
-28.55
-29.46
-31.20
-30.69
-32.42
-33.41
MAGPIE CREEK
PLATE 4.
MIDDLE MONITORING ZONE
POTENTIOMETRIC SURFACE MAP
FOR DATA COLLECTED JANUARY 3 - 4, 1989
McCLELLAN AFB
Groundwater Sampling & Analysis Program
LEGEND:
McCLELLAN AFB BOUNDARY
STREAMS
30
POTENTIOMETRIC CONTOUR LINE
AND ELEVATION (FT MSL)


ASCOT
MAGPIE CREEK
-90.85
VINCI
-92.24
DRAINAGE CHANNEL
CLAIRE
CHANNEL
CREEK
JOYCE
-91.72
MAGPIE
OLD
SANTA ANA
MAGPIE CREEK
-94.11
-93.95
-95.08
-95.81
MAIN
-94.87
MAGPIE CREE
-98.10
GRACE
RAILEY
MARYSVILLE
BELL
MAY
-41.59
DOWNAR
PINELL
BARBARA
ASTORIA
MORGAN
NORTH
-43.69


-30.69
-32.24
DRAINAGE CHANNEL
-34.11
MAGPIE CREEK
-33.95
-35.06
-35.81
-34.87
MAGPIE CREEK
MAGPIE CREEK
-32.42
-33.41
-38.10
-38.58
-38.22
-39.66
-33.01
-41.53
DOWNAR
-47.51
-40.34
HINTERS
-35.38
ARCADE CREEK
PINELL
BARBARA
ASTORIA
MORGAN
-42.02
-43.69
TATE
-45.57

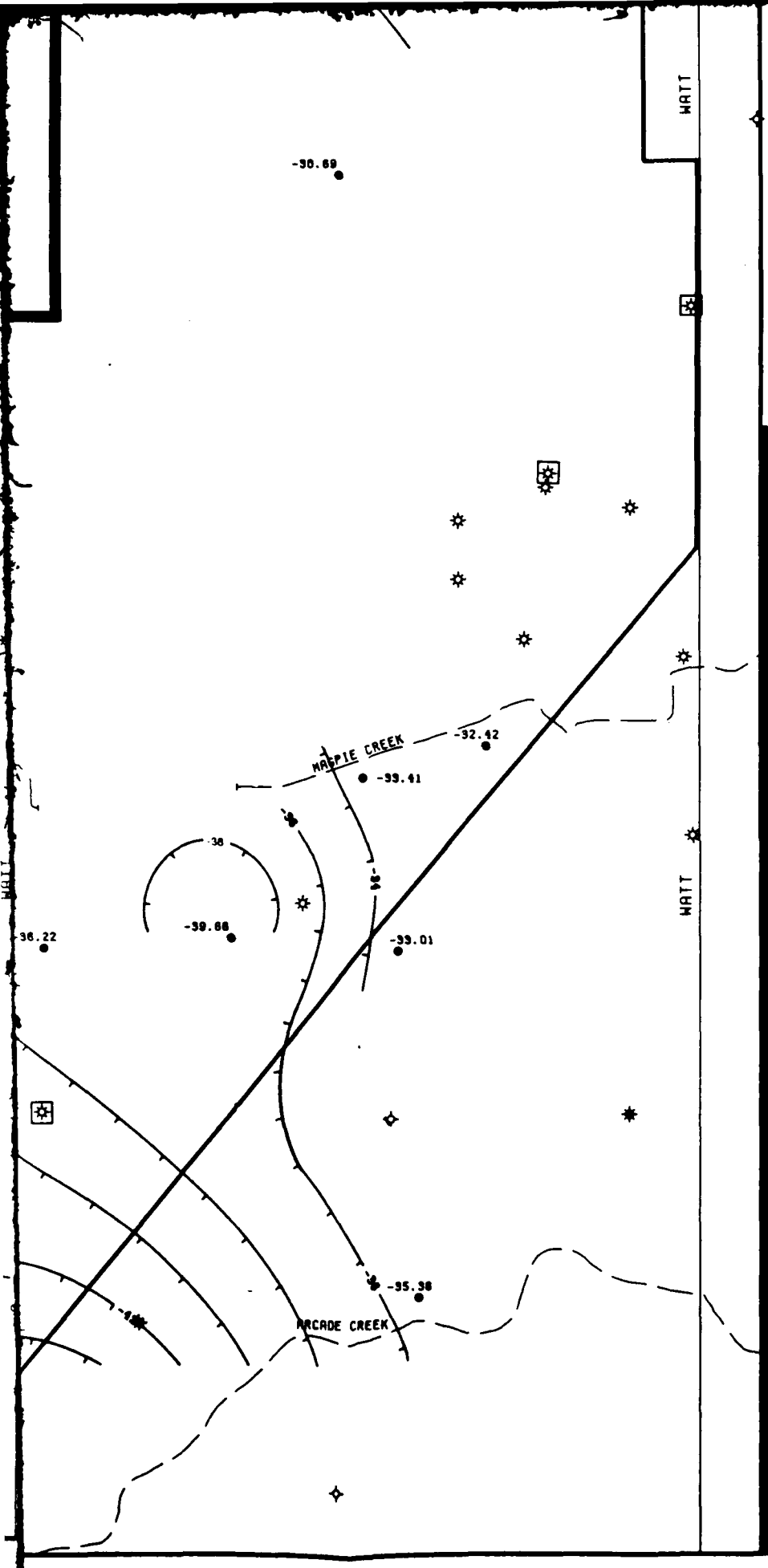


PLATE 4.
MIDDLE MONITORING ZONE POTENTIOMETRIC SURFACE MAP FOR DATA COLLECTED JANUARY 3 - 4, 1989

McCLELLAN AFB
Groundwater Sampling & Analysis Program

LEGEND:

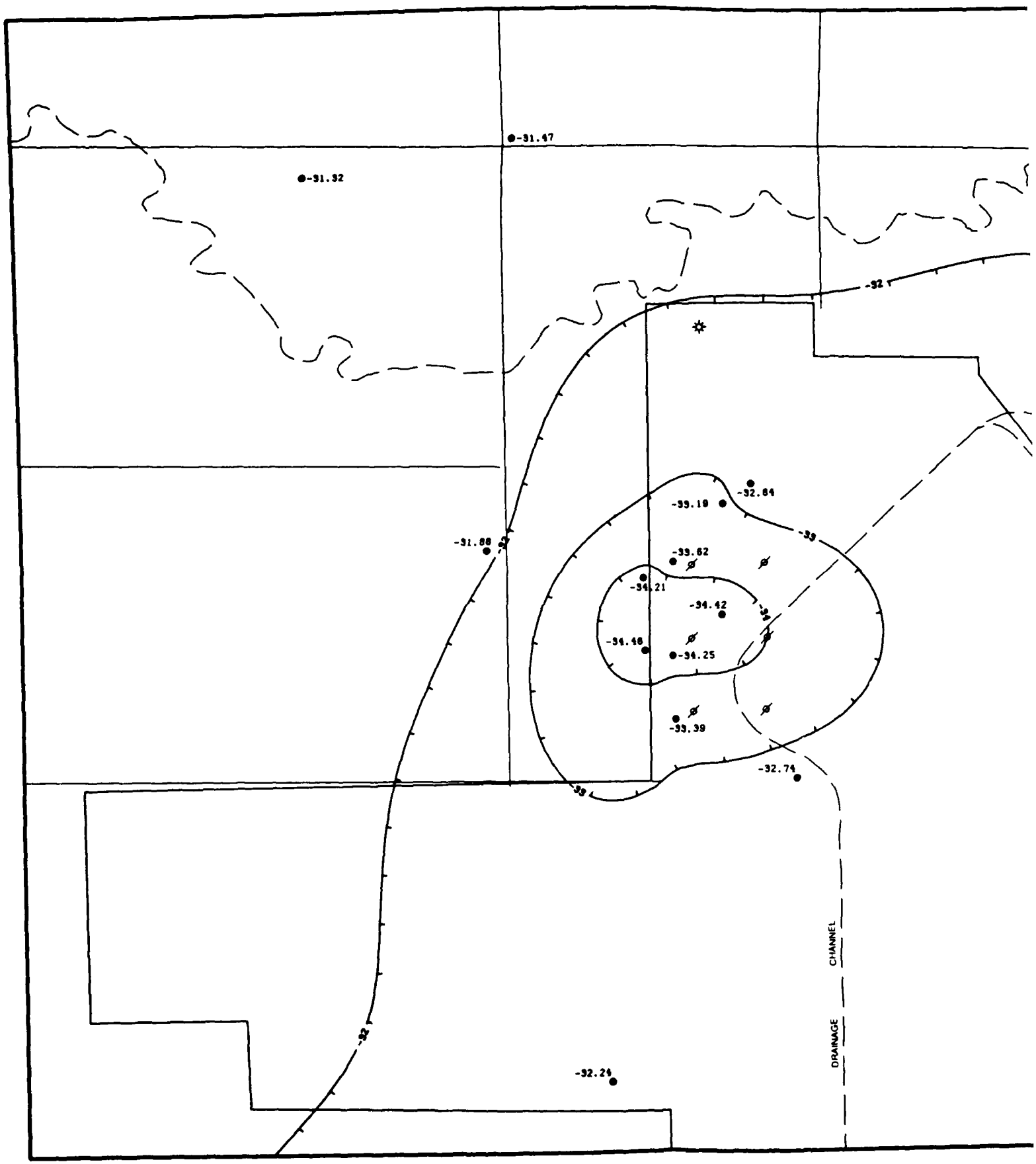
- McCLELLAN AFB BOUNDARY
- STREAMS
- 30 — POTENTIOMETRIC CONTOUR LINE AND ELEVATION (FT. MSL)
  (NOTE Hash marks indicate groundwater flow direction.)
- MIDDLE ZONE MONITORING WELL
- INACTIVE BASE PRODUCTION WELL
- ACTIVE BASE PRODUCTION WELL
- CITY WELL
- CALTRANS WELL
- EXTRACTION WELL

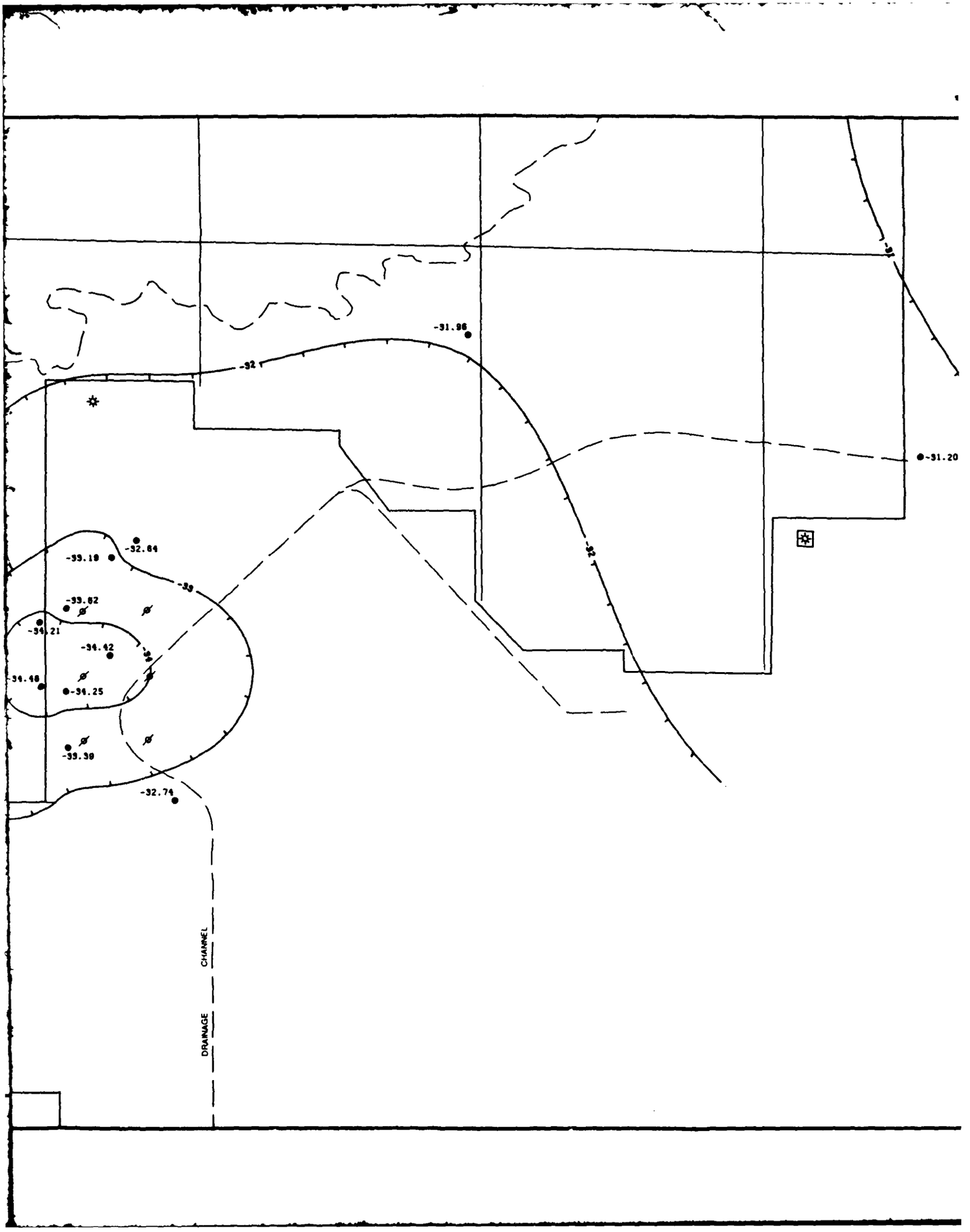
N

0 500 1000
SCALE IN FEET

GENERATED BY	James E. Hess	DATE: 1/24/89
PEER REVIEW:	Lyle D. Thompson	DATE: 1/24/89
PROJECT REVIEW:	Deena A. Sonsey	DATE: 1/24/89

RADIAN CORPORATION


-31.47
-31.32
-92
-32.84
-33.19
-31.88
-33
-33.62
-34.21
-34.42
-34.46
-34.25
-33.39
-32.74
-92
-92.24
DRAINAGE CHANNEL


-91.96
-92
-91.20
-91
-92
-32.84
-33.18
-33
-33.82
-34.21
-34.42
-34
-34.48
-34.25
-33.38
-32.74
DRAINAGE CHANNEL

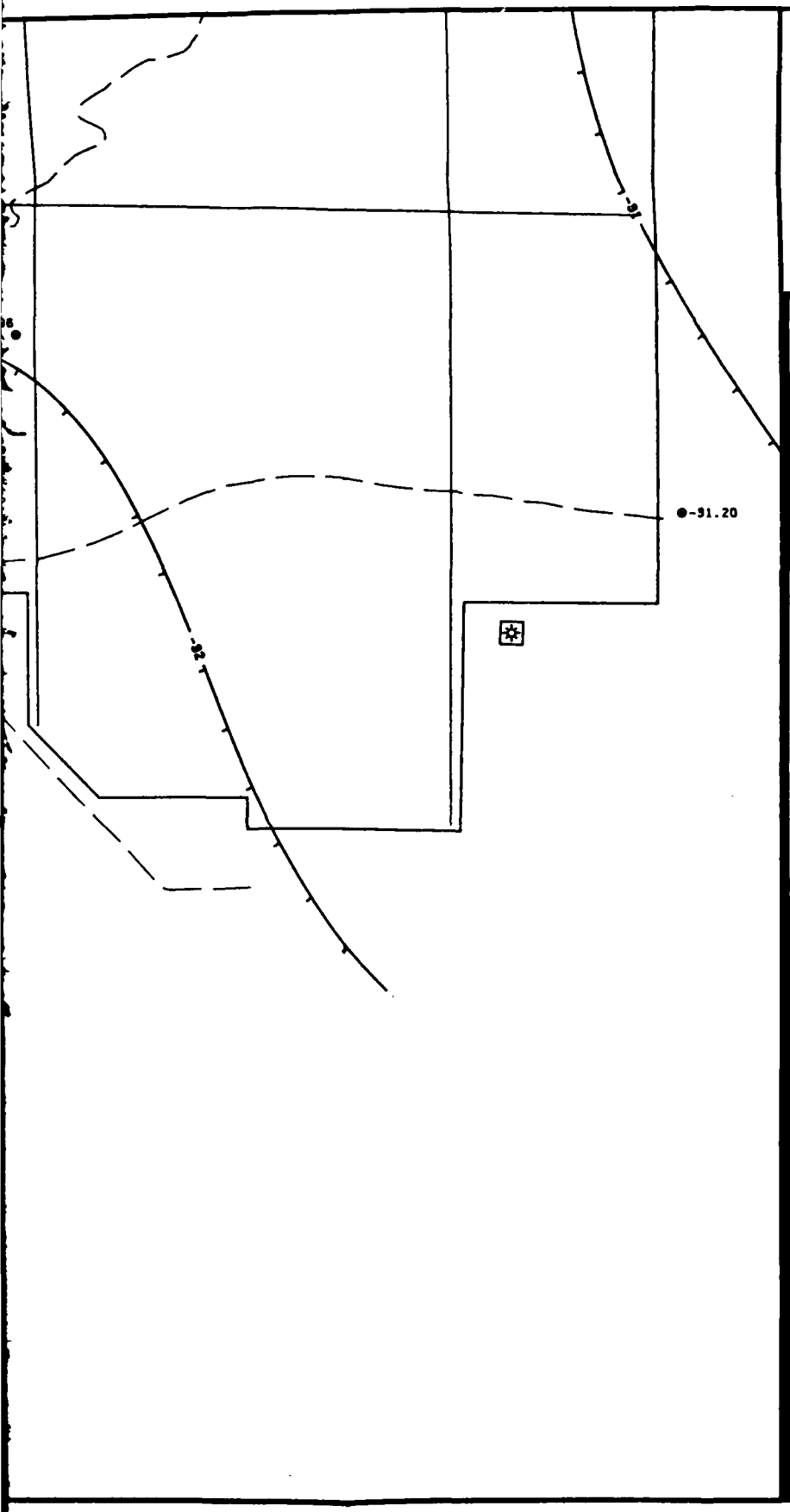


PLATE 5.
AREA D - MIDDLE MONITORING ZONE POTENTIOMETRIC SURFACE MAP FOR DATA COLLECTED JANUARY 3 - 4, 1989

McCLELLAN AFB
Groundwater Sampling & Analysis Program

LEGEND:

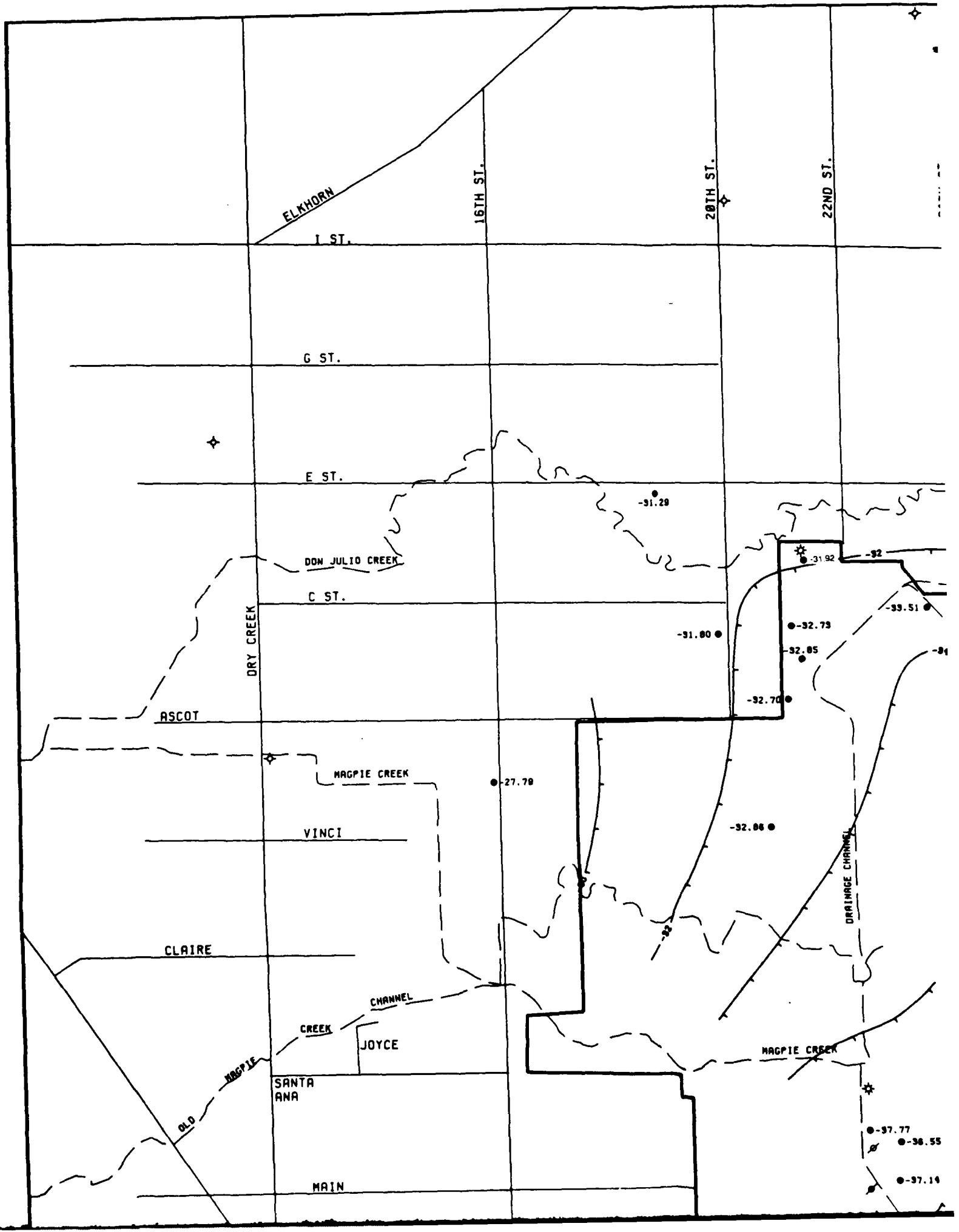
- McCLELLAN AFB BOUNDARY
- STREAMS
- 30 — POTENTIOMETRIC CONTOUR LINE AND ELEVATION (FT. MSL)
  (NOTE: Hash marks indicate groundwater flow direction.)
- MIDDLE ZONE MONITORING WELL
- INACTIVE BASE PRODUCTION WELL
- ACTIVE BASE PRODUCTION WELL
- CITY WELL
- CALTRANS WELL
- EXTRACTION WELL

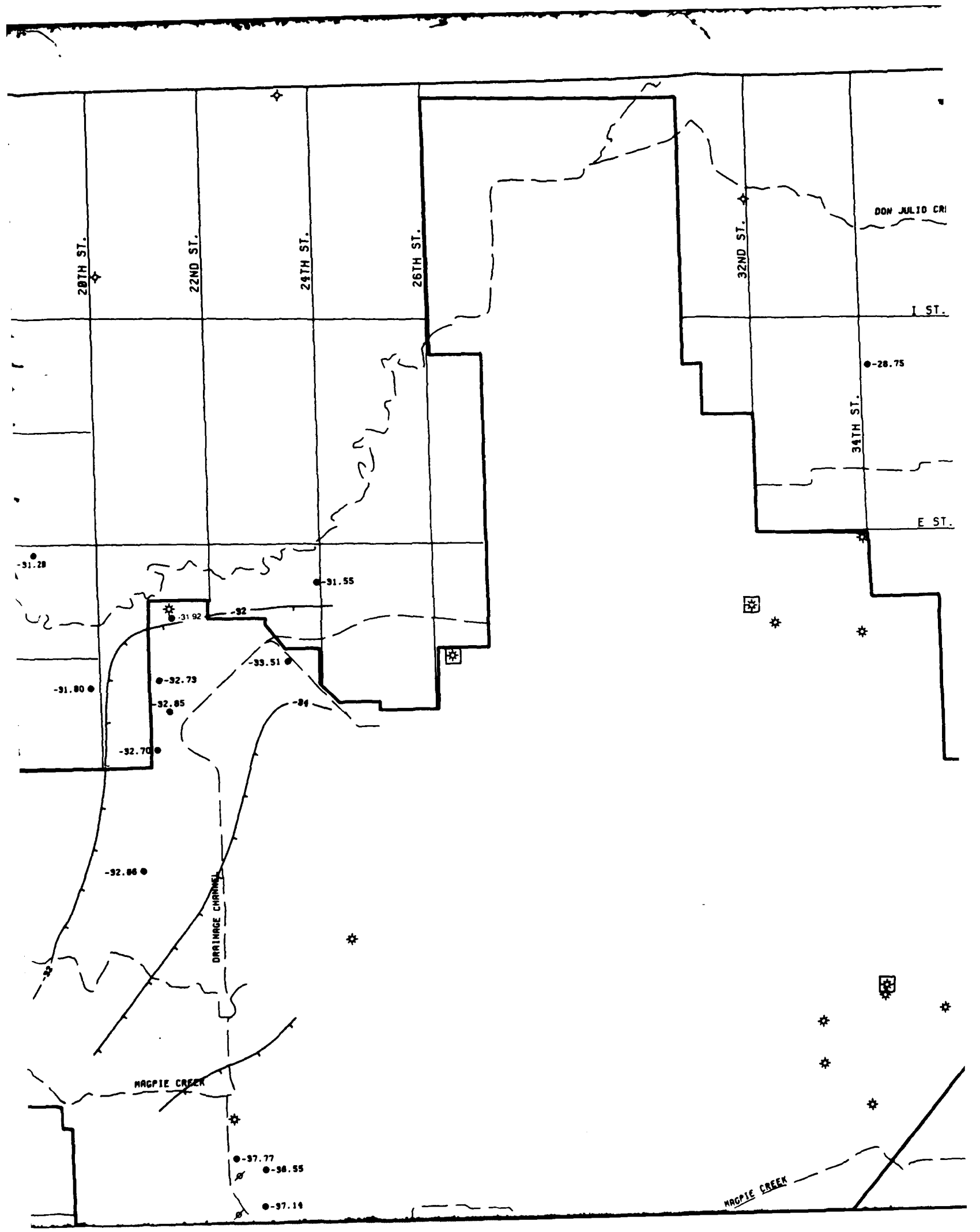
N

0 200 400
SCALE IN FEET

GENERATED BY:	James E Hunt	DATE: 1/24/89
PEER REVIEW	Stephen P Thompson	DATE: 1/24/89
PROJECT REVIEW	Deanna A Stanley	DATE: 1/24/89

RADIAN CORPORATION


ELKHORN
I ST.
16TH ST.
20TH ST.
22ND ST.
G ST.
E ST.
-31.29
DON JULIO CREEK
-31.92
-92
C ST.
DRY CREEK
-33.51
-31.80
-32.73
-32.85
ASCOT
-32.70
MAGPIE CREEK
-27.79
VINCI
-32.86
DRAINAGE CHANNEL
CLAIRE
CHANNEL
CREEK
JOYCE
MAGPIE
OLD
SANTA ANA
MAGPIE CREEK
-37.77
-36.55
-37.14
MAIN


20TH ST.
22ND ST.
24TH ST.
26TH ST.
32ND ST.
34TH ST.
I ST.
E ST.
DON JULIO CR
-31.28
-31.55
-31.92
-92
-33.51
-31.80
-92.79
-92.85
-94
-32.70
-92.86
DRAINAGE CHANNEL
MAGPIE CREEK
-97.77
-98.55
-97.14
-28.75
MAGPIE CREEK

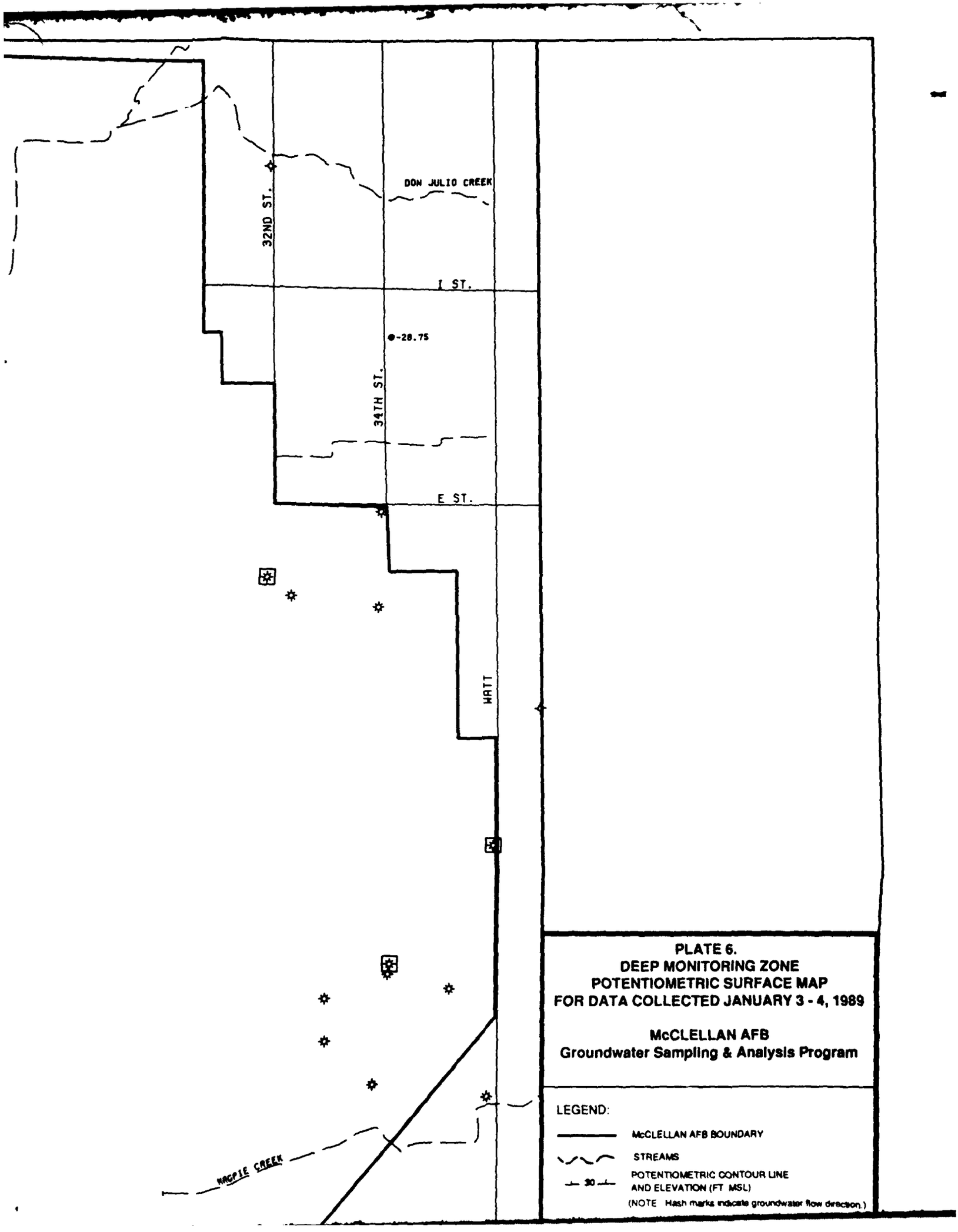


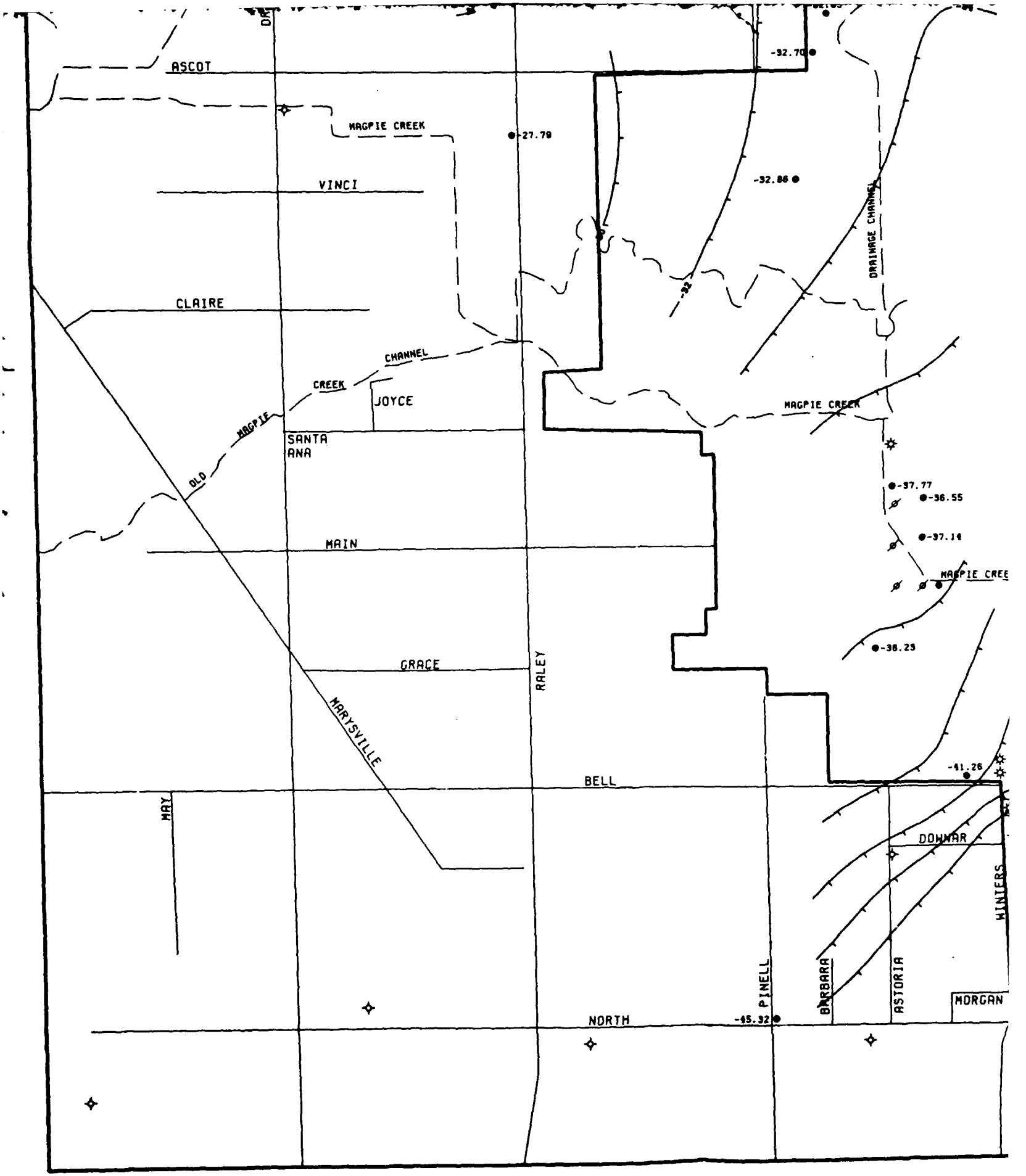
PLATE 6.
DEEP MONITORING ZONE
POTENTIOMETRIC SURFACE MAP
FOR DATA COLLECTED JANUARY 3 - 4, 1989

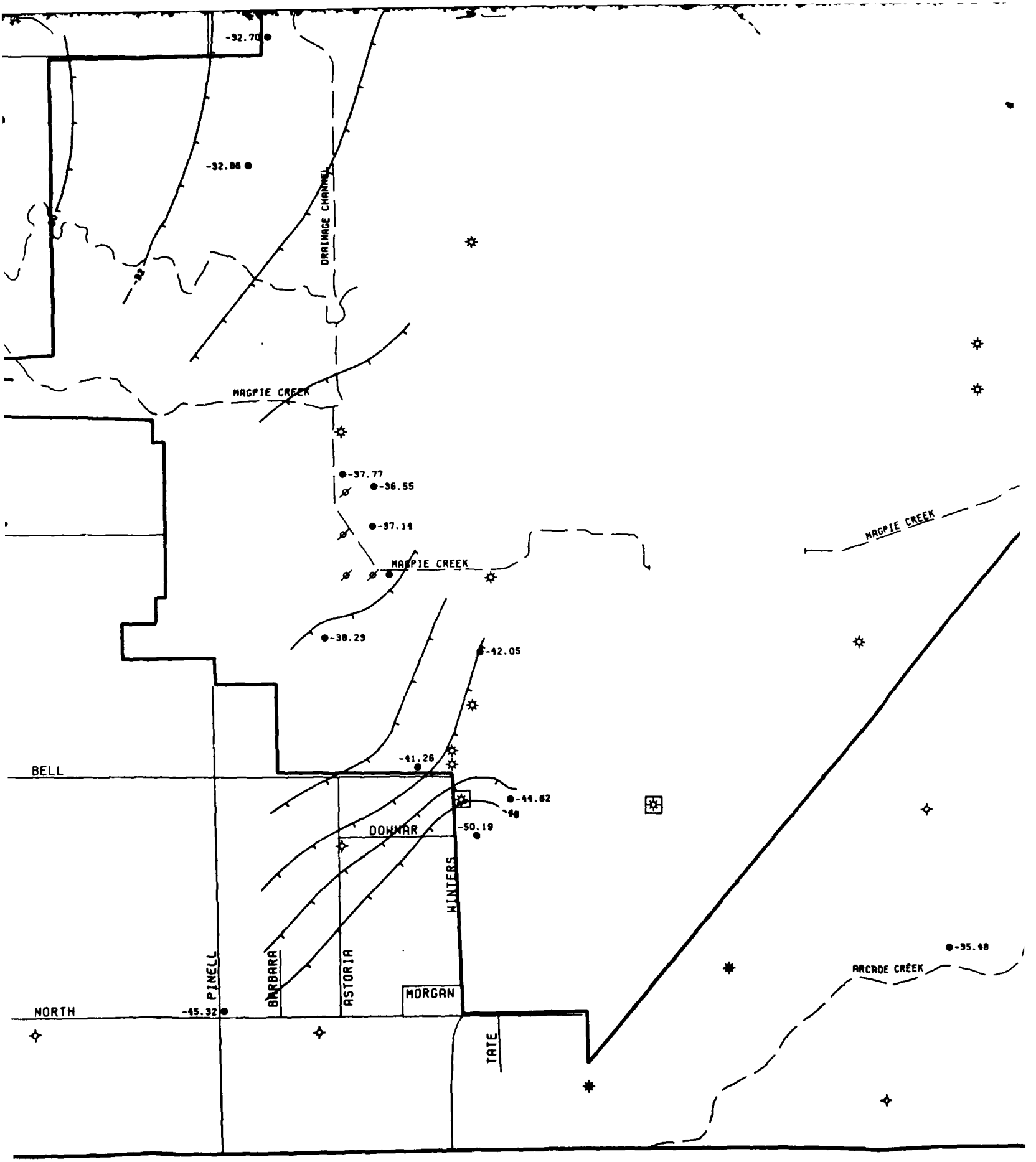
McCLELLAN AFB
Groundwater Sampling & Analysis Program

LEGEND:

- McCLELLAN AFB BOUNDARY
- STREAMS
- 30 — POTENTIOMETRIC CONTOUR LINE AND ELEVATION (FT MSL)

(NOTE Hash marks indicate groundwater flow direction.)


ASCOT
MAGPIE CREEK
-27.78
VINCI
-32.86
-32.70
DRAINAGE CHANNEL
CLAIRE
CHANNEL
CREEK
JOYCE
MAGPIE CREEK
OLD MAGPIE
SANTA ANA
-37.77
-36.55
-37.14
MAIN
MAGPIE CREE
-38.23
GRACE
RALEY
MARYSVILLE
-41.26
BELL
MAY
DOWNAR
WINIERS
PINELL
BARBARA
ASTORIA
MORGAN
NORTH
-45.92


-32.70
-32.86
DRAINAGE CHANNEL
MAGPIE CREEK
-37.77
-36.55
-37.14
MAGPIE CREEK
MAGPIE CREEK
-38.29
-42.05
-41.26
BELL
-44.82
DOWNAR
-50.19
WINTERS
PINELL
BARBARA
ASTORIA
MORGAN
NORTH
-45.32
TATE
-35.48
ARCADE CREEK

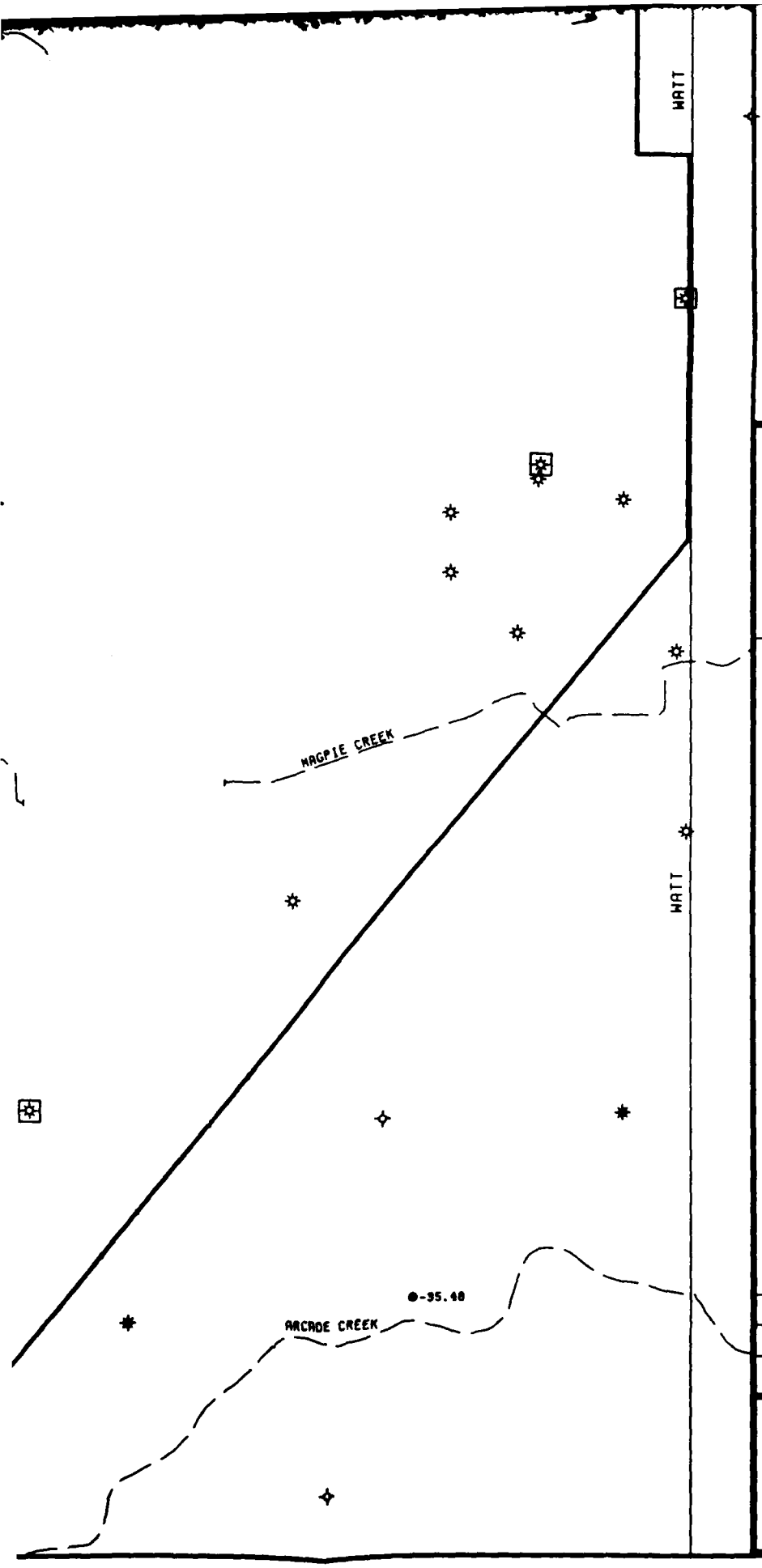


PLATE 6.
DEEP MONITORING ZONE
POTENTIOMETRIC SURFACE MAP
FOR DATA COLLECTED JANUARY 3 - 4, 1989

McCLELLAN AFB
Groundwater Sampling & Analysis Program

LEGEND:

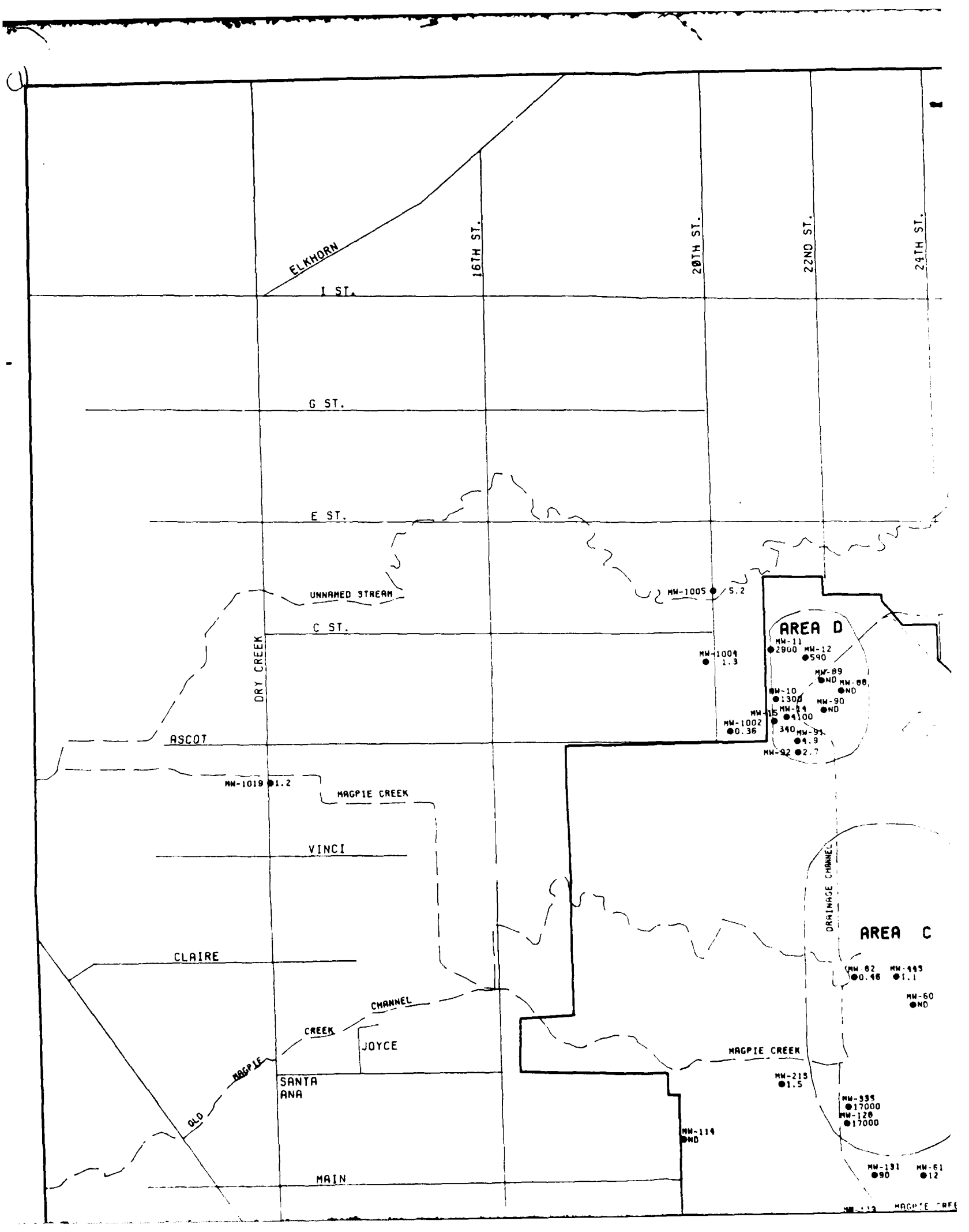
- McCLELLAN AFB BOUNDARY
- STREAMS
- 30 — POTENTIOMETRIC CONTOUR LINE AND ELEVATION (FT. MSL)
  (NOTE: Hash marks indicate groundwater flow direction.)
- DEEP ZONE MONITORING WELL
- INACTIVE BASE PRODUCTION WELL
- ACTIVE BASE PRODUCTION WELL
- CITY WELL
- CALTRANS WELL
- EXTRACTION WELL

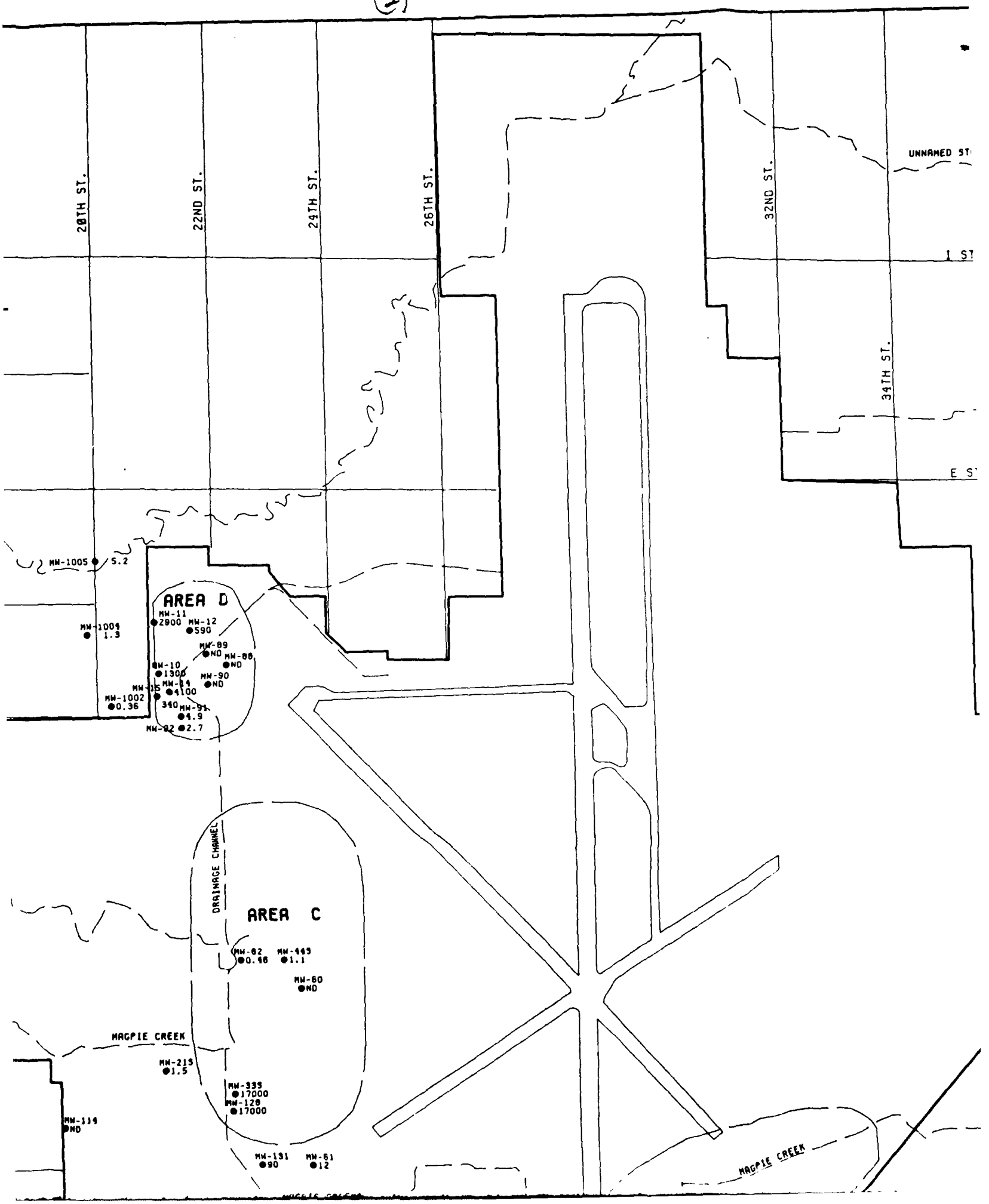
N

0 500 1000
SCALE IN FEET

GENERATED BY:	James E. Hein	DATE: 1/24/89
PEER REVIEW	Tyler P Thompson	DATE: 1/24/89
PROJECT REVIEW	Deana A Stanley	DATE: 1/24/89

RADIAN CORPORATION


ELKHORN
I ST.
16TH ST.
20TH ST.
22ND ST.
24TH ST.
G ST.
E ST.
C ST.
UNNAMED STREAM
DRY CREEK
ASCOT
VINCI
CLAIRE
JOYCE
SANTA ANA
MAGPIE CREEK
CHANNEL
CREEK
OLD MAGPIE
MAIN
DRAINAGE CHANNEL
MW-1005 5.2
MW-1009 1.3
MW-1002 0.36
MW-1019 1.2
AREA D
MW-11 2900
MW-12 590
MW-89 ND
MW-88 ND
MW-10 1300
MW-90 ND
MW-15 1100
MW-91 4.9
MW-92 2.7
340
AREA C
MW-82 0.48
MW-93 1.1
MW-60 ND
MW-215 1.5
MW-93S 17000
MW-120 17000
MW-114 ND
MW-131 90
MW-61 12


20TH ST.
22ND ST.
24TH ST.
26TH ST.
32ND ST.
34TH ST.
UNNAMED ST
I ST
E ST
MW-1005 5.2
AREA D
MW-11 2900
MW-12 590
MW-1004 1.9
MW-89 ND
MW-88 ND
MW-10 1300
MW-90 ND
MW-14 4100
MW-15
MW-1002 0.36
340
MW-91 4.9
MW-92 2.7
DRAINAGE CHANNEL
AREA C
MW-62 0.46
MW-443 1.1
MW-60 ND
MAGPIE CREEK
MW-215 1.5
MW-333 17000
MW-120 17000
MW-119 ND
MW-131 90
MW-61 12
MAGPIE CREEK

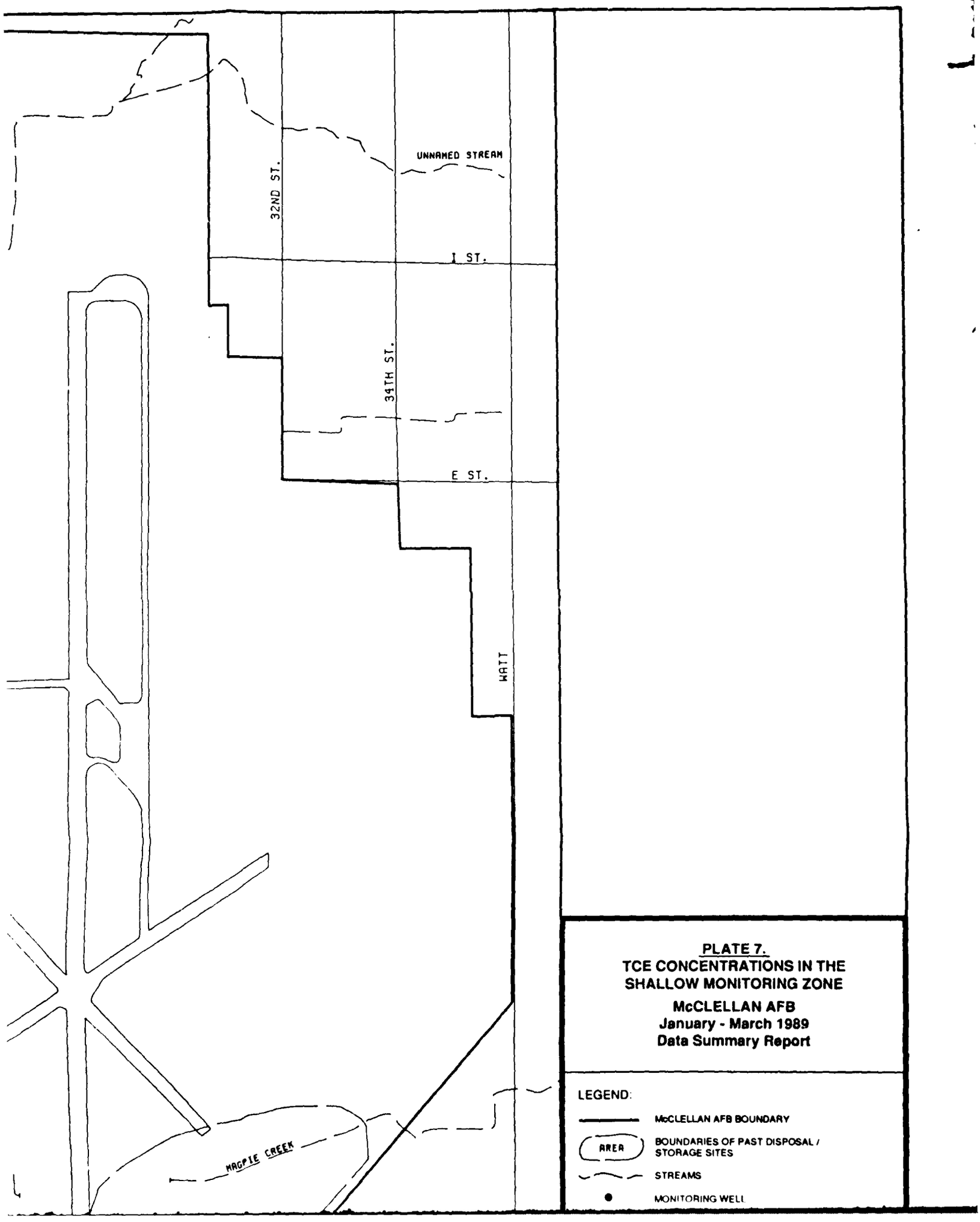
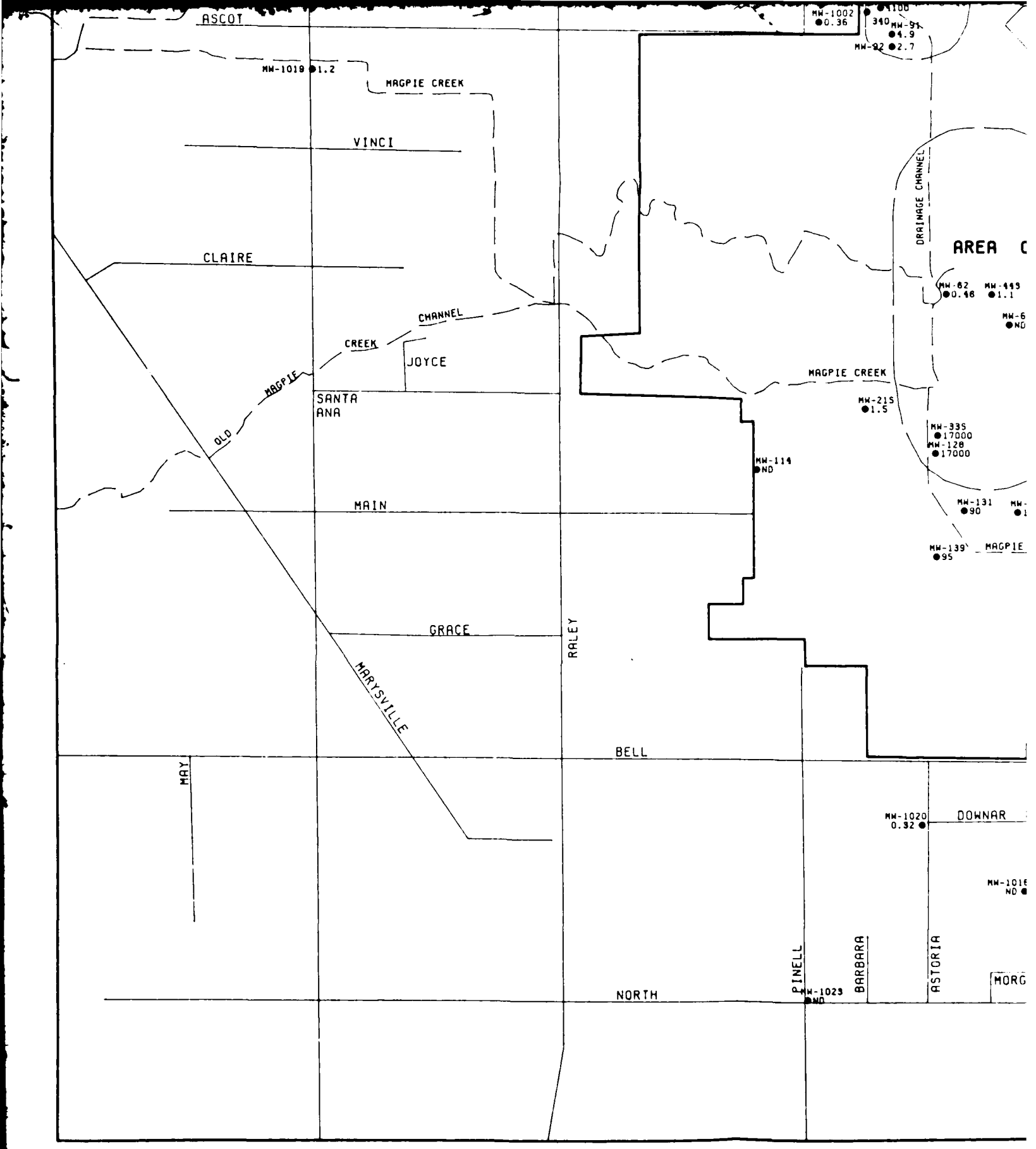
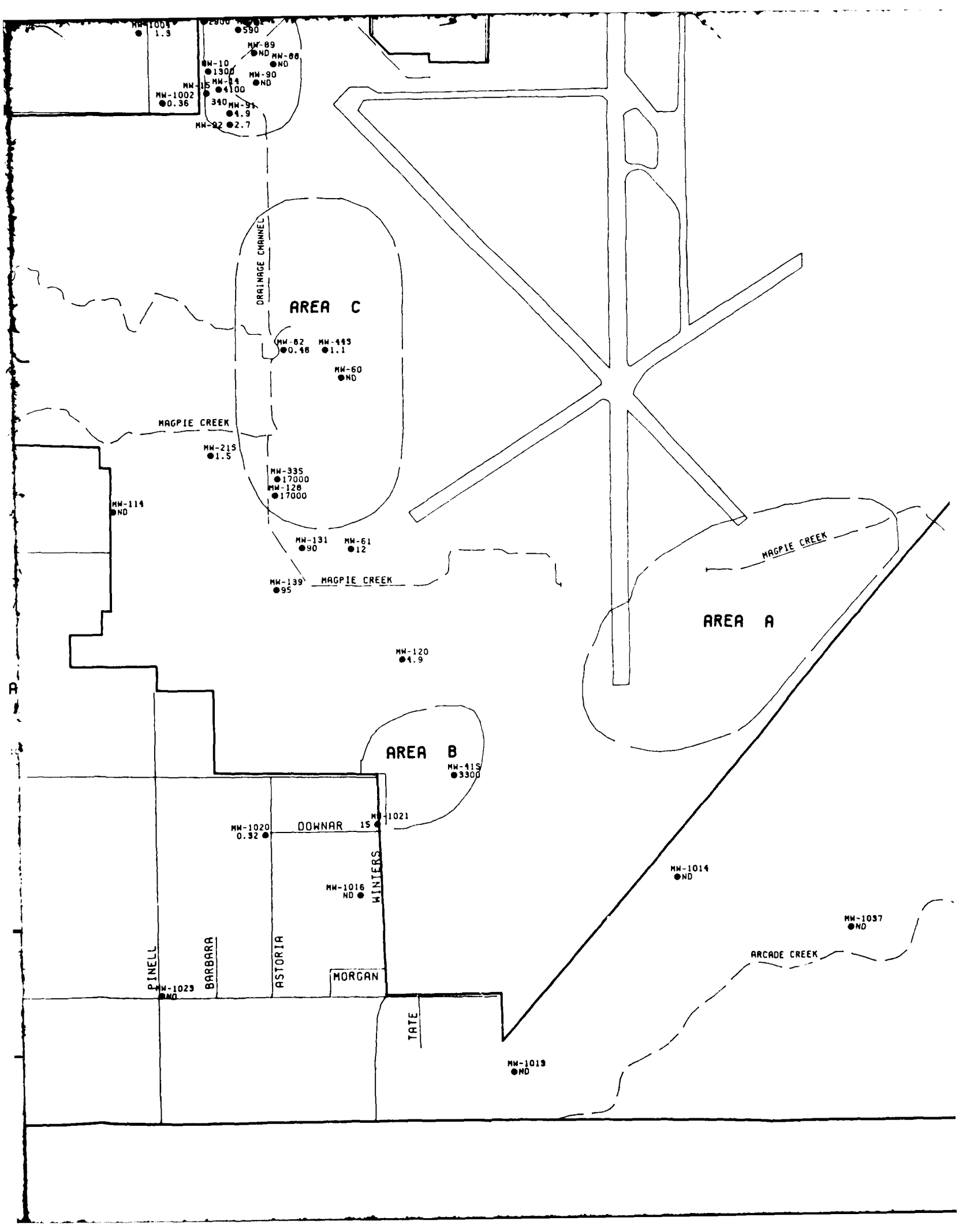


PLATE 7.
TCE CONCENTRATIONS IN THE SHALLOW MONITORING ZONE
McCLELLAN AFB
January - March 1989
Data Summary Report

LEGEND:

- McCLELLAN AFB BOUNDARY
- AREA — BOUNDARIES OF PAST DISPOSAL / STORAGE SITES
- STREAMS
- MONITORING WELL


ASCOT
MW-1018 1.2
MAGPIE CREEK
VINCI
CLAIRE
CHANNEL
CREEK
JOYCE
MAGPIE
OLD
SANTA ANA
MAIN
GRACE
MARYSVILLE
RALEY
BELL
MAY
NORTH
PINELL
BARBARA
ASTORIA
MW-1002 0.36
340
MW-91 4.9
MW-92 2.7
DRAINAGE CHANNEL
AREA
MW-62 0.46
MW-215 1.5
MAGPIE CREEK
MW-335 17000
MW-128 17000
MW-114 ND
MW-131 90
MW-139 95
MW-1020 0.92
DOWNAR
MW-1023 ND
MORG


MW-1001
1.3
590
MW-89
ND
MW-88
ND
MW-10
1300
MW-90
ND
MW-84
4100
MW-15
MW-1002
0.36
340
MW-91
4.9
MW-92
2.7
DRAINAGE CHANNEL
AREA C
MW-62
0.48
MW-445
1.1
MW-60
ND
MAGPIE CREEK
MW-215
1.5
MW-335
17000
MW-128
17000
MW-114
ND
MW-131
90
MW-61
12
MW-139
95
MAGPIE CREEK
MAGPIE CREEK
AREA A
MW-120
4.9
AREA B
MW-415
3300
MW-1021
MW-1020
0.92
DOWNAR
MW-1016
ND
WINTERS
MW-1014
ND
MW-1037
ND
ARCADE CREEK
PINELL
BARBARA
ASTORIA
MORGAN
MW-1023
ND
TATE
MW-1019
ND

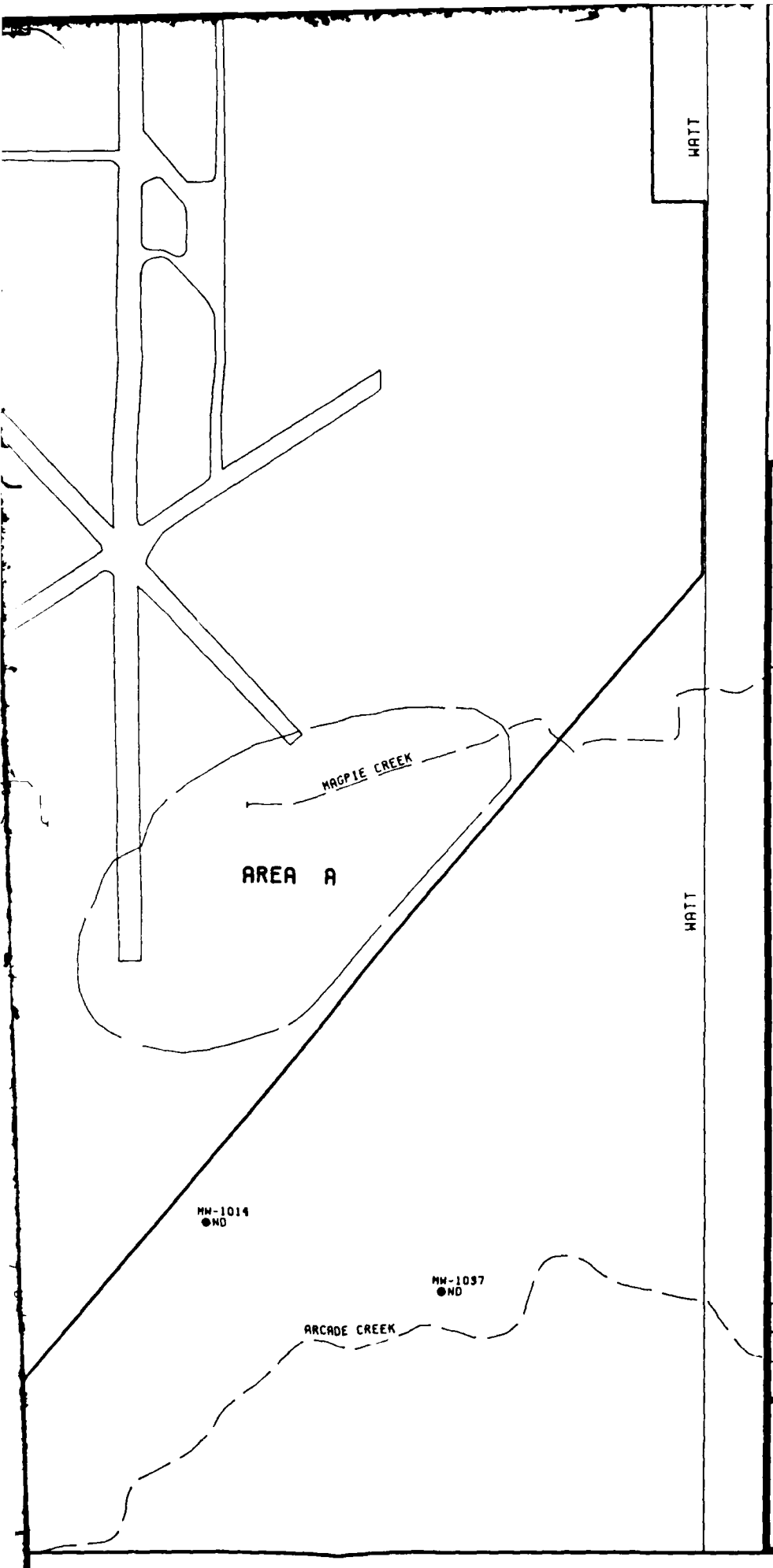


PLATE 7.
TCE CONCENTRATIONS IN THE SHALLOW MONITORING ZONE
McCLELLAN AFB
January - March 1989
Data Summary Report

LEGEND:

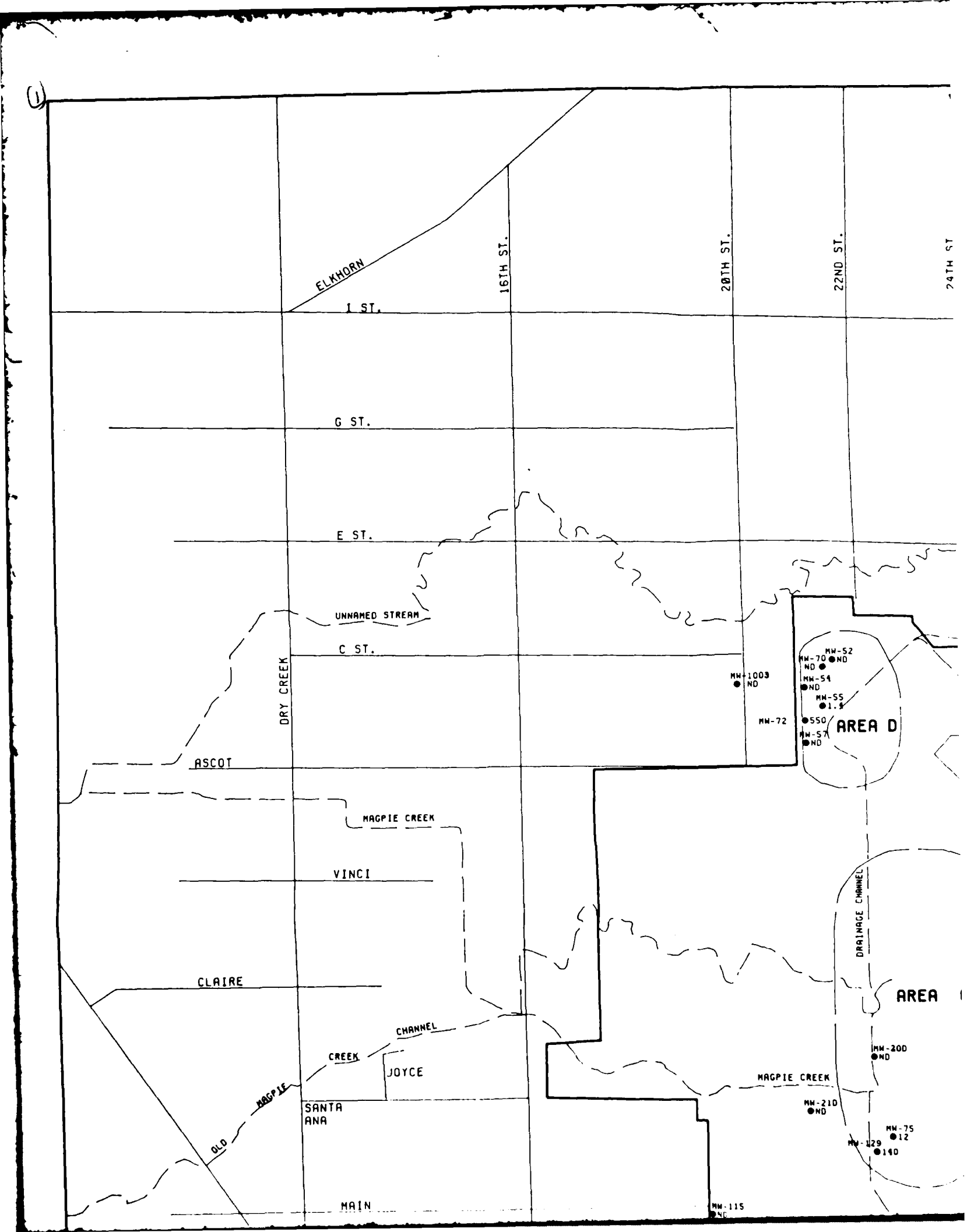
———	McCLELLAN AFB BOUNDARY
AREA	BOUNDARIES OF PAST DISPOSAL / STORAGE SITES
~~	STREAMS
●	MONITORING WELL
1000.00	TCE CONCENTRATION (ug/L)
ND	TCE NOT DETECTED

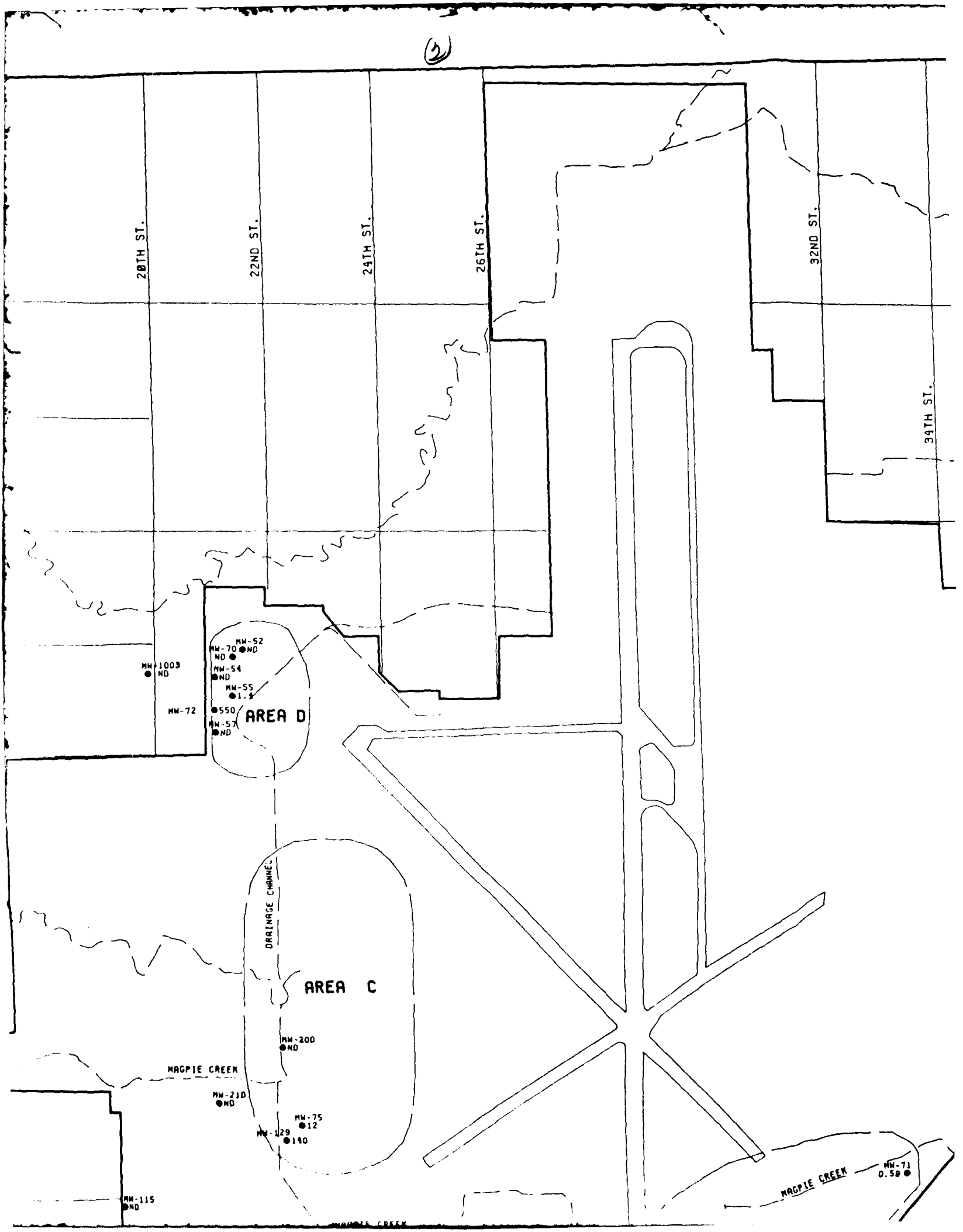
N

0 500 1000
SCALE IN FEET

GENERATED BY	[illegible]	DATE: 4-17-89
PEER REVIEW	Deana A. Gallagher	DATE 4-17-89
PROJECT REVIEW	[illegible]	DATE 4-17-89

RADIAN CORPORATION


ELKHORN
I ST.
16TH ST.
20TH ST.
22ND ST.
24TH ST
G ST.
E ST.
UNNAMED STREAM
C ST.
DRY CREEK
ASCOT
MAGPIE CREEK
VINCI
CLAIRE
CHANNEL
CREEK
JOYCE
OLD MAGPIE
SANTA ANA
MAIN
MW-52 ND
MW-70 ND
ND
MW-54 ND
MW-55 1.9
MW-1003 ND
MW-72
550
MW-57 ND
AREA D
DRAINAGE CHANNEL
AREA
MW-200 ND
MAGPIE CREEK
MW-210 ND
MW-75 12
MW-129 140
MW-115 ND


(2)
20TH ST.
22ND ST.
24TH ST.
26TH ST.
32ND ST.
34TH ST.
MW-52
ND
MW-70
ND
MW-54
ND
MW-55
1.9
MW-1003
ND
MW-72
550
MW-57
ND
AREA D
DRAINAGE CHANNEL
AREA C
MW-200
ND
MAGPIE CREEK
MW-210
ND
MW-75
12
MW-129
190
MW-115
ND
MAGPIE CREEK
MW-71
0.59

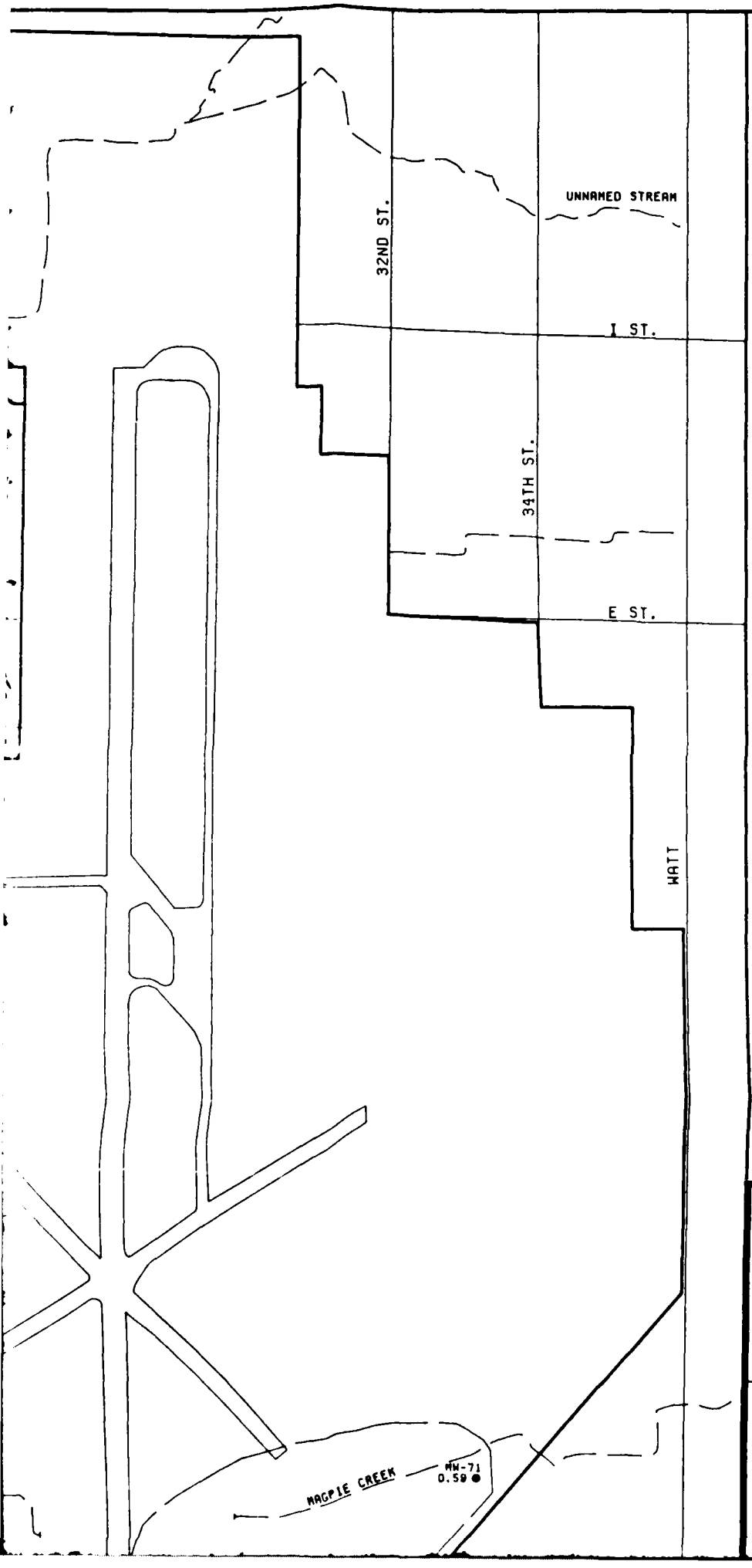
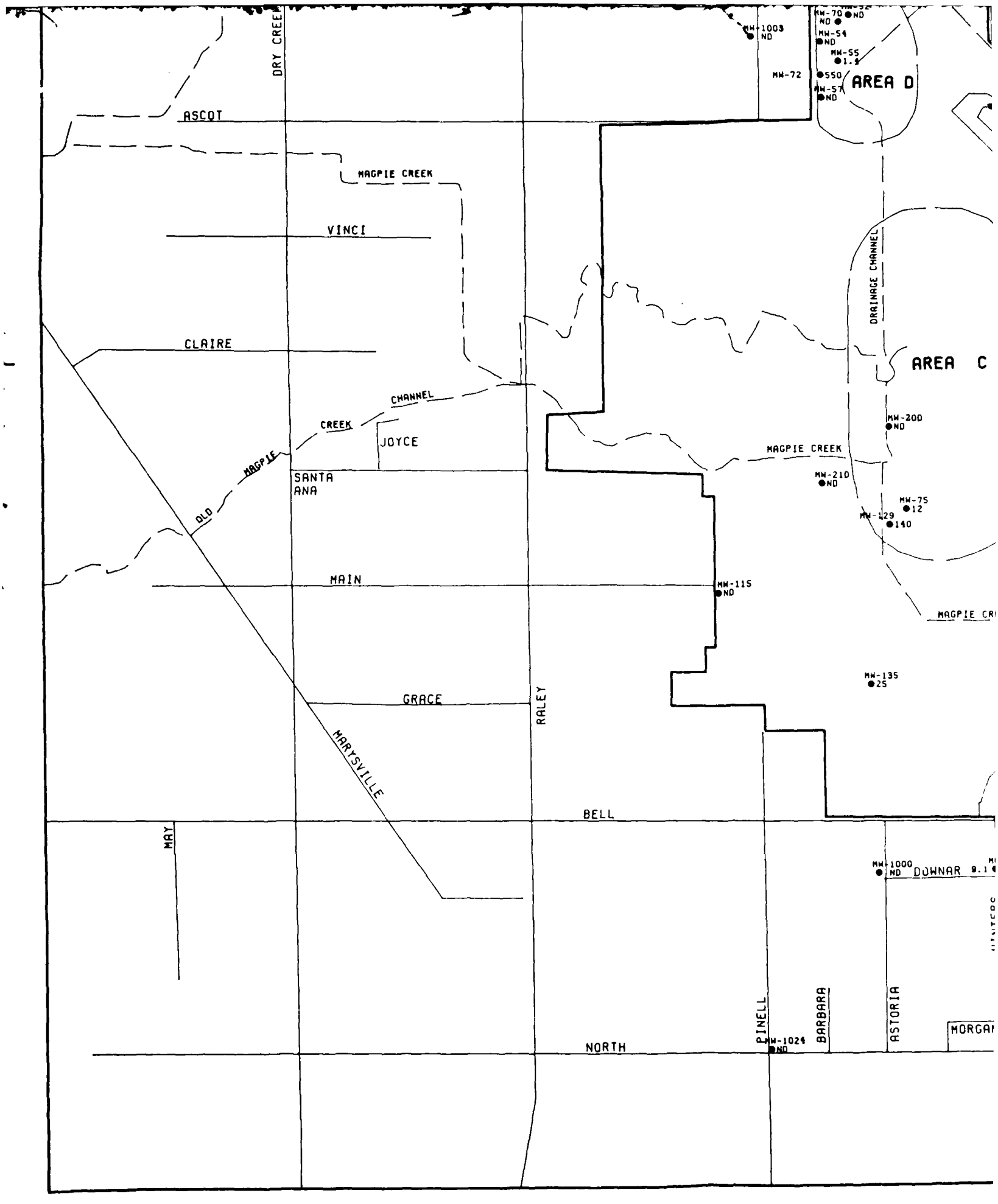
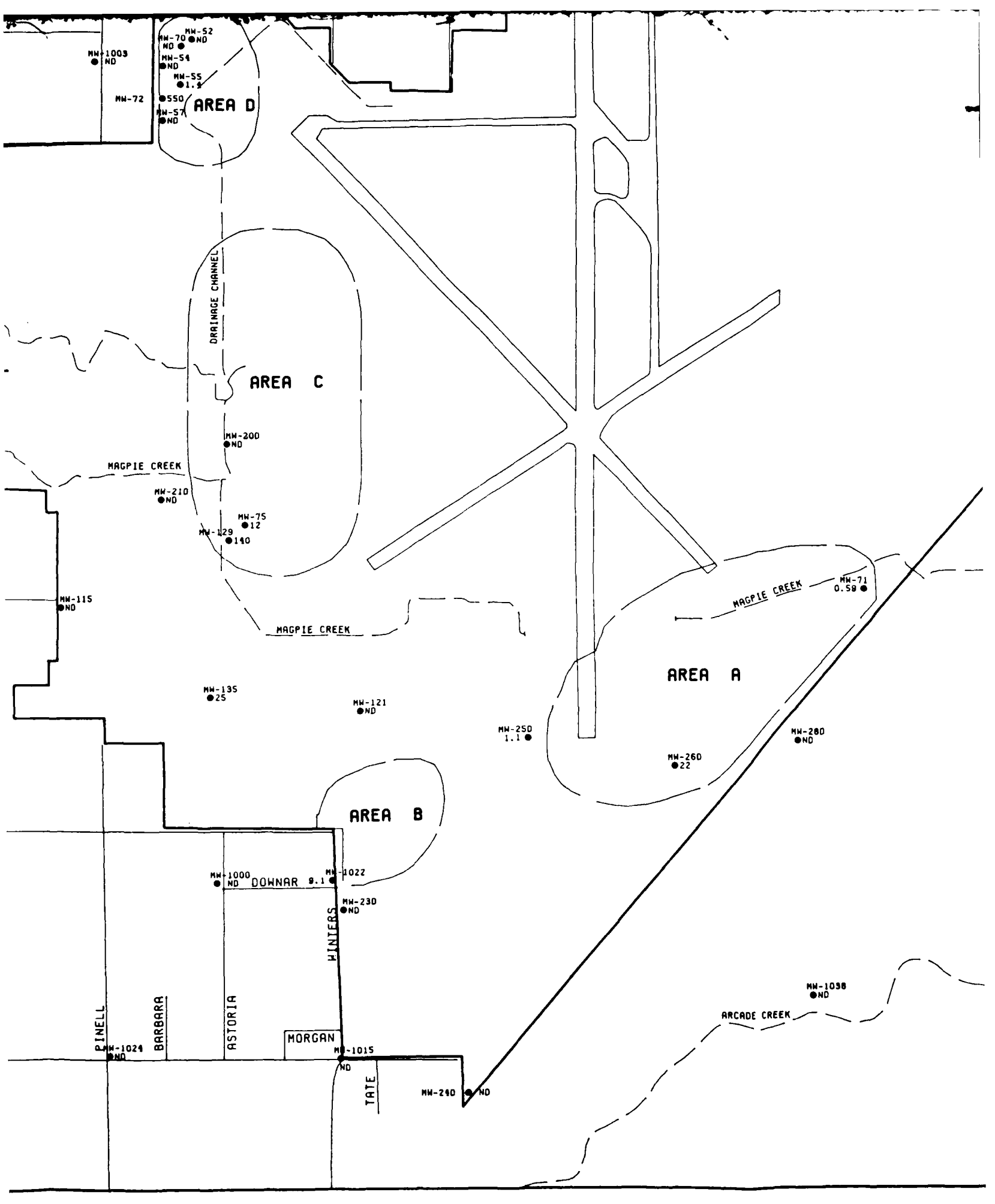


PLATE 8.
TCE CONCENTRATIONS IN THE MIDDLE MONITORING ZONE
McCLELLAN AFB
January - March 1989
Data Summary Report

LEGEND:

- McCLELLAN AFB BOUNDARY
- AREA — BOUNDARIES OF PAST DISPOSAL / STORAGE SITES
- STREAMS
- MONITORING WELL


DRY CREEK
ASCOT
MAGPIE CREEK
VINCI
CLAIRE
CHANNEL
CREEK
JOYCE
OLD MAGPIE
SANTA ANA
MAIN
GRACE
MARYSVILLE
RALEY
BELL
MAY
NORTH
PINELL
BARBARA
ASTORIA
DOWNAR
MORGAN
DRAINAGE CHANNEL
AREA D
AREA C
MAGPIE CREEK
MAGPIE CR
MW-1003 ND
MW-72
MW-70 ND
MW-54 ND
MW-55 1.5
550
MW-57 ND
MW-200 ND
MW-210 ND
MW-75 12
MW-129 140
MW-115 ND
MW-135 25
MW-1000 ND
MW-1024 ND


MW-1003
ND
MW-72
MW-70
ND
MW-52
ND
MW-54
ND
MW-55
1.9
550
MW-57
ND
AREA D
DRAINAGE CHANNEL
AREA C
MW-200
ND
MAGPIE CREEK
MW-210
ND
MW-75
12
MW-129
140
MW-115
ND
MAGPIE CREEK
MAGPIE CREEK
MW-71
0.58
AREA A
MW-135
25
MW-121
ND
MW-250
1.1
MW-260
22
MW-280
ND
AREA B
MW-1000
ND
DOWNAR
MW-1022
9.1
MW-230
ND
WINTERS
MW-1038
ND
ARCADE CREEK
PINELL
MW-1024
ND
BARBARA
ASTORIA
MORGAN
MW-1015
ND
TATE
MW-240
ND

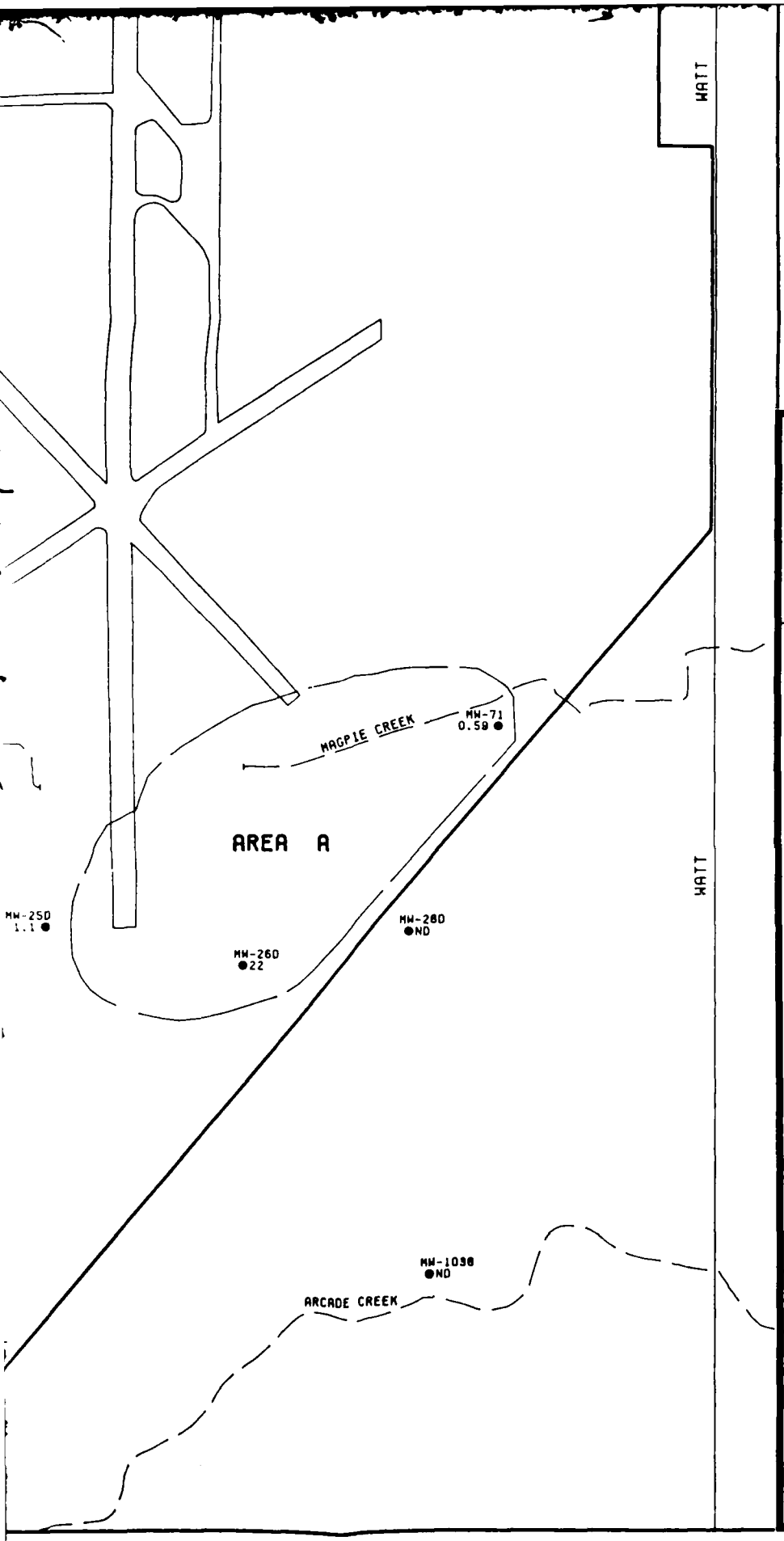


PLATE 8.
TCE CONCENTRATIONS IN THE MIDDLE MONITORING ZONE
McCLELLAN AFB
January - March 1989
Data Summary Report

LEGEND:

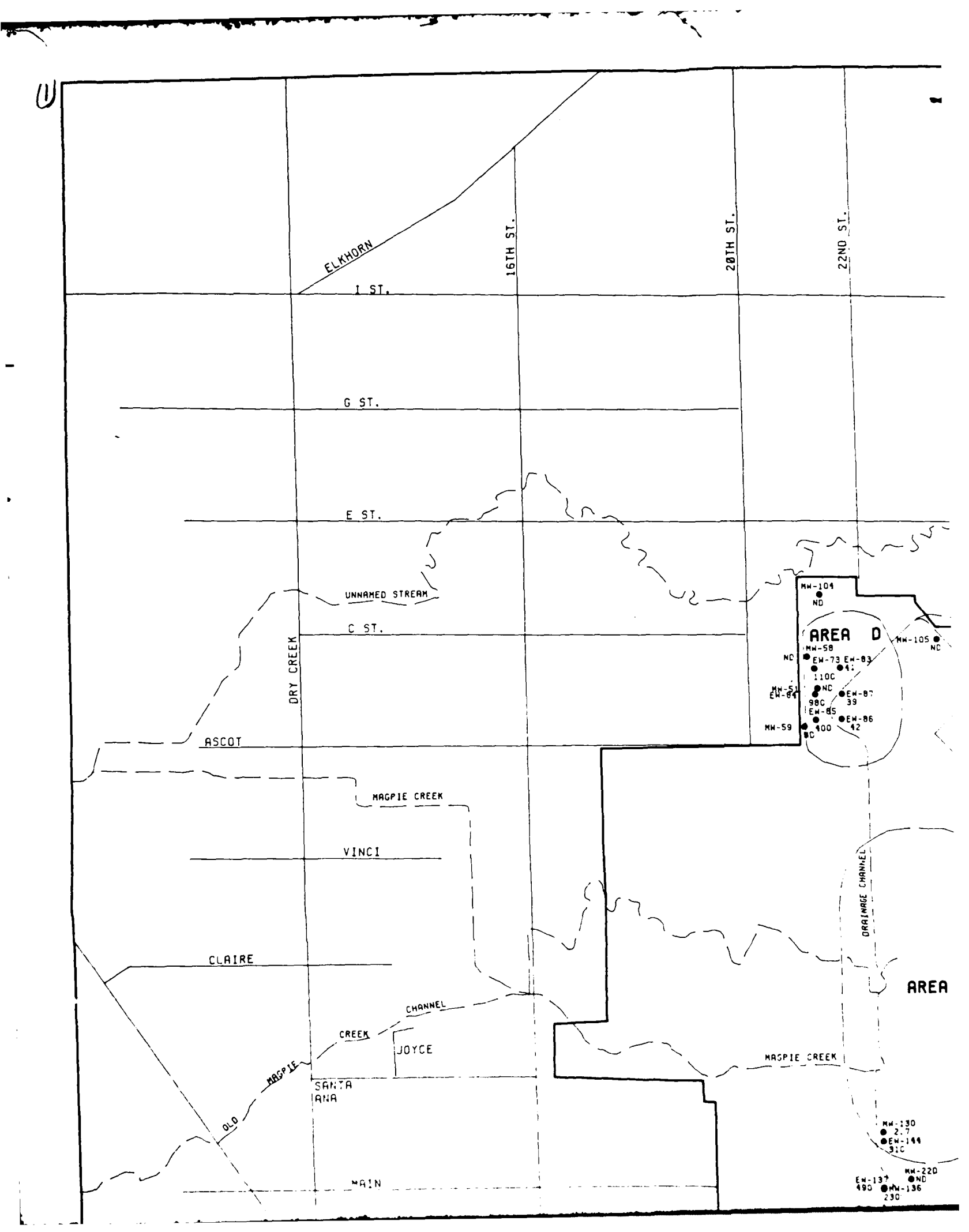
———	McCLELLAN AFB BOUNDARY
AREA	BOUNDARIES OF PAST DISPOSAL / STORAGE SITES
~~	STREAMS
●	MONITORING WELL
1000 00	TCE CONCENTRATION (ug/L)
ND	TCE NOT DETECTED

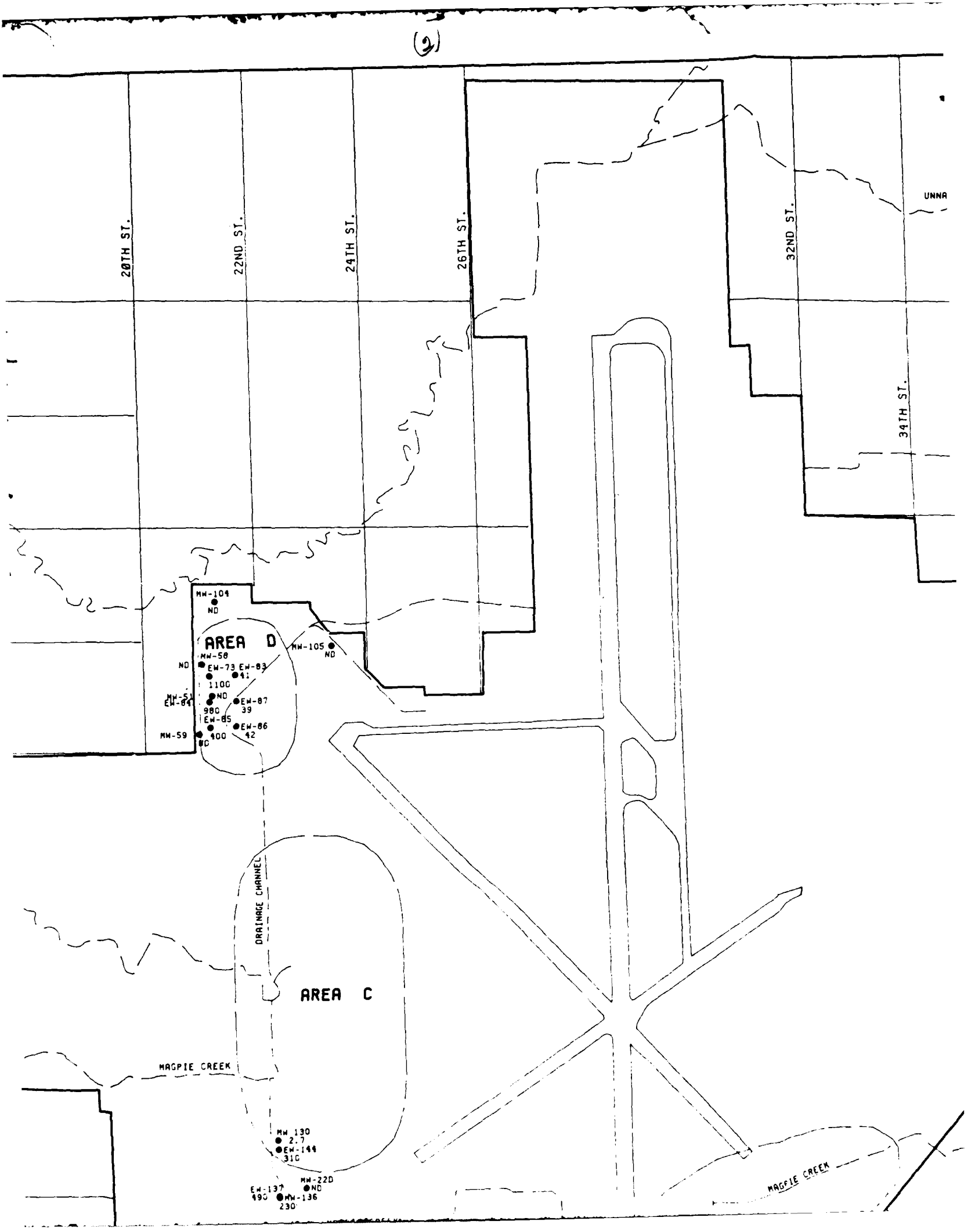
N

0 500 1000
SCALE IN FEET

GENERATED BY Lorraine Godden DATE 4-17-89
PEER REVIEW Deena A Stanley DATE 4-17-89
PROJECT REVIEW Mark T McClellan DATE 4-17-89

RADIAN CORPORATION


ELKHORN
I ST.
16TH ST.
20TH ST.
22ND ST.
G ST.
E ST.
UNNAMED STREAM
C ST.
DRY CREEK
ASCOT
MAGPIE CREEK
VINCI
CLAIRE
CHANNEL
CREEK
JOYCE
MAGPIE
OLD
SANTA
ANA
MAIN
AREA D
MW-104
ND
MW-105
ND
MW-58
ND
EW-73
EW-83
110C
ND
98C
EW-87
39
EW-85
EW-86
42
MW-59
400
DC
DRAINAGE CHANNEL
AREA
MAGPIE CREEK
MW-130
2.7
EW-144
31C
MW-220
ND
EW-137
490
MW-136
230


20TH ST.
22ND ST.
24TH ST.
26TH ST.
32ND ST.
34TH ST.
UNNA
AREA D
AREA C
DRAINAGE CHANNEL
MAGPIE CREEK
MAGPIE CREEK
MW-104
ND
MW-105
ND
MW-58
ND
EW-73
1100
EW-83
41
EW-84
980
EW-87
39
EW-85
400
EW-86
42
MW-59
ND
MW-130
2.7
EW-144
310
MW-220
ND
EW-137
490
MW-136
230

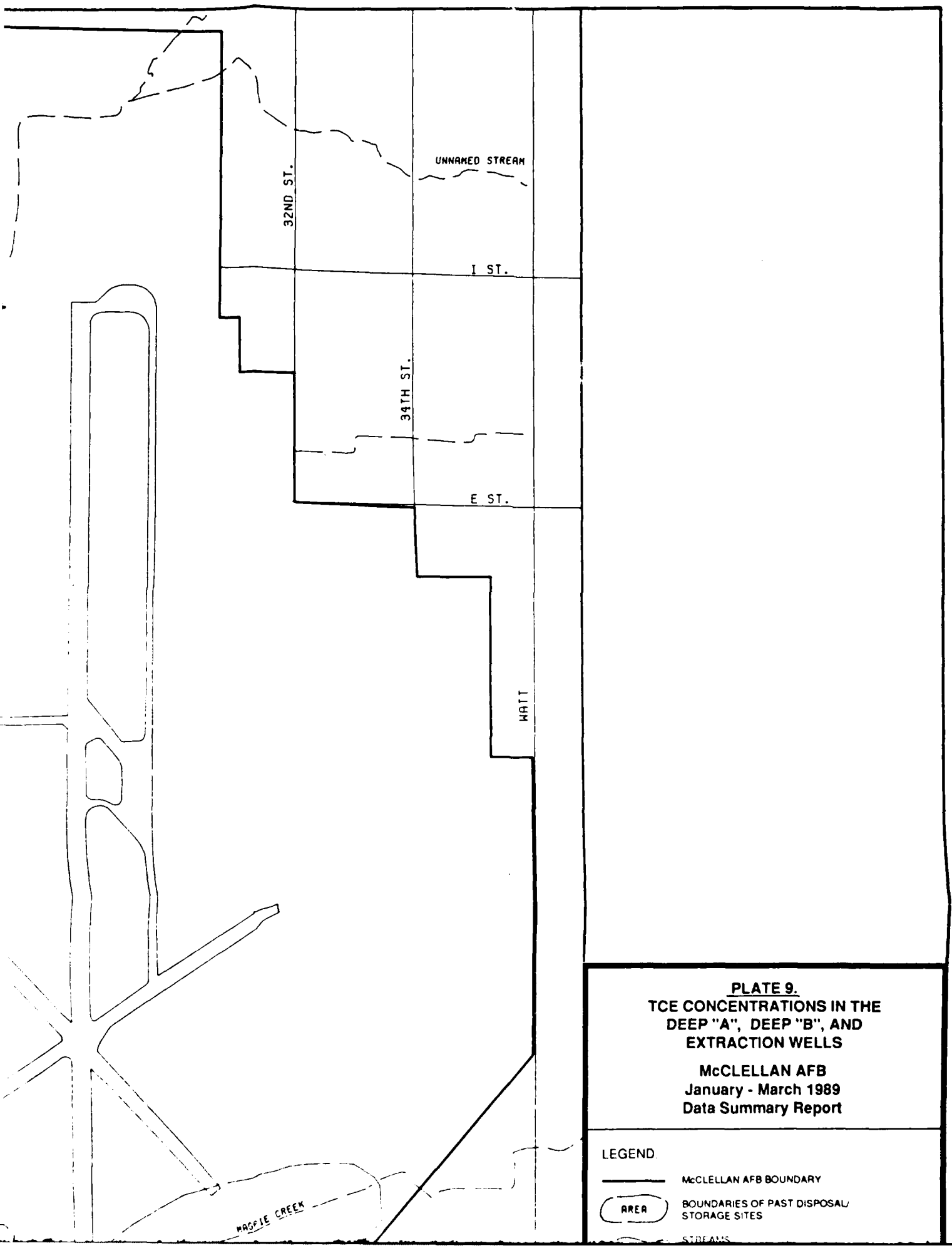


PLATE 9.
TCE CONCENTRATIONS IN THE DEEP "A", DEEP "B", AND EXTRACTION WELLS

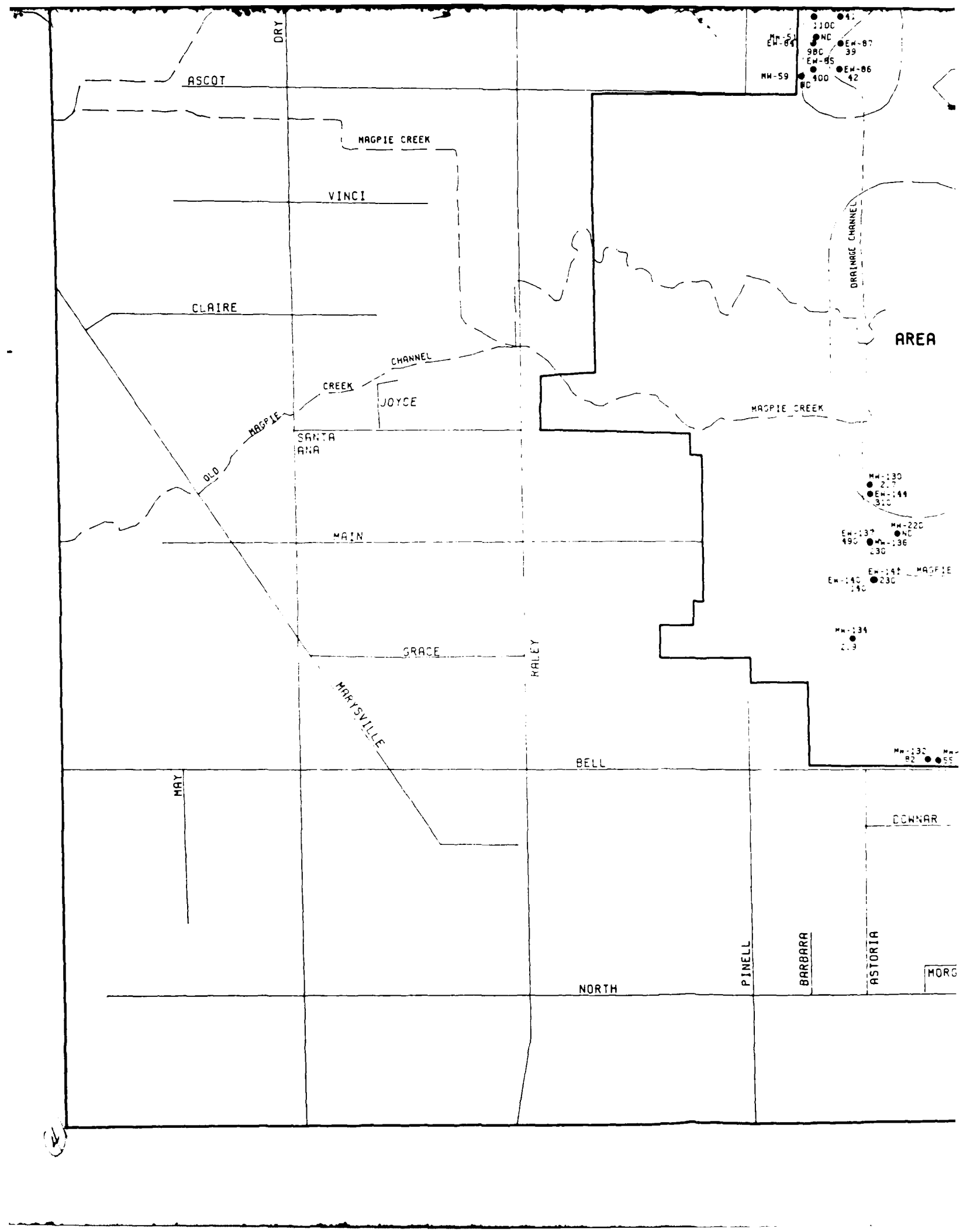
McCLELLAN AFB
January - March 1989
Data Summary Report

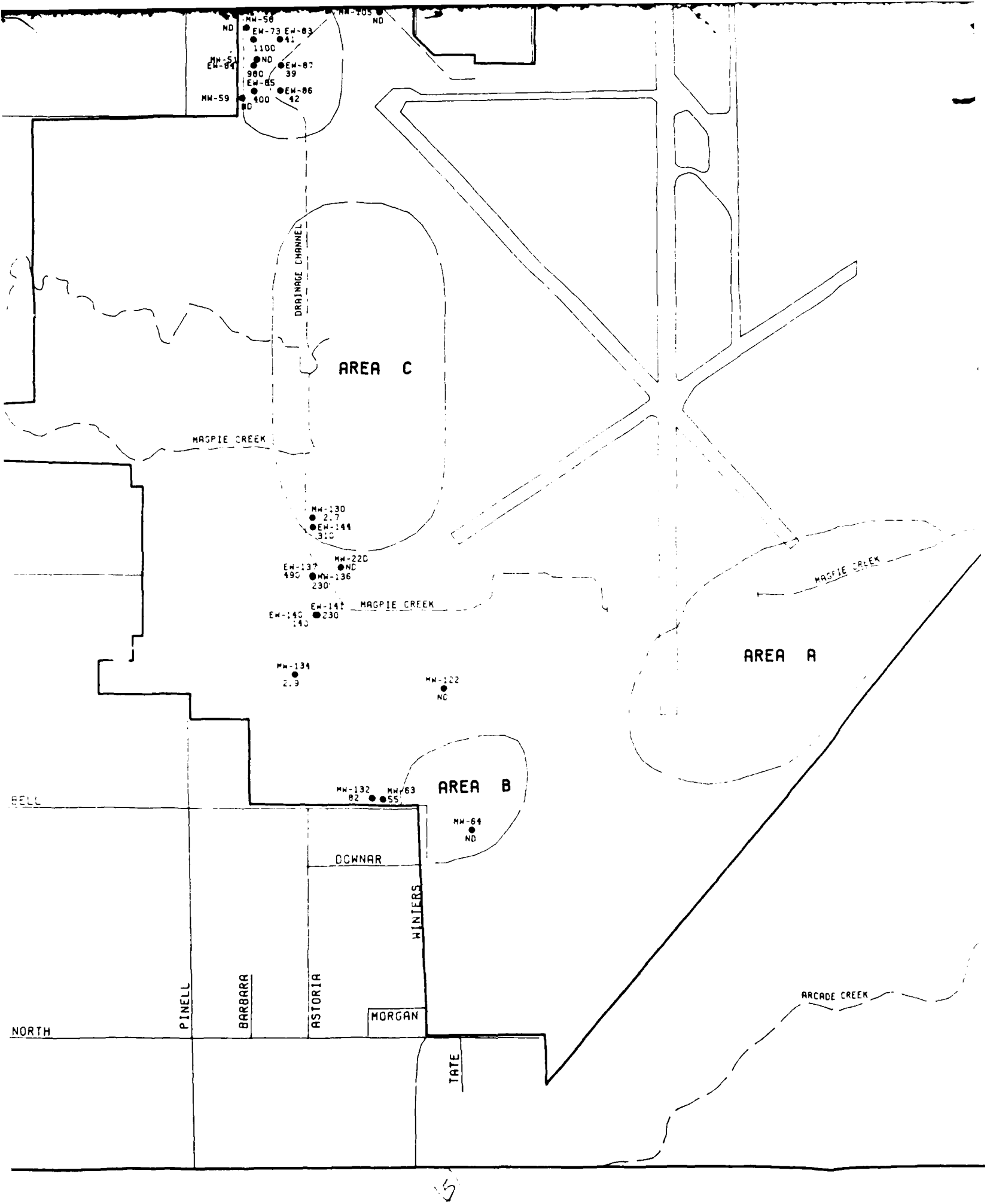
LEGEND

McCLELLAN AFB BOUNDARY

AREA — BOUNDARIES OF PAST DISPOSAL/ STORAGE SITES

STREAMS


ASCOT
DRY
MAGPIE CREEK
VINCI
CLAIRE
DRAINAGE CHANNEL
AREA
CHANNEL
CREEK
JOYCE
MAGPIE
SANTA
ANA
OLD
MAGPIE CREEK
MAIN
GRACE
KALEY
MARYSVILLE
BELL
MAY
DOWNAR
PINELL
BARBARA
ASTORIA
NORTH
MW-59
EW-87
EW-86
MW-130
EW-144
MW-220
MW-136
MW-134
MAGPIE


MW-58
ND
EW-73
1100
EW-83
41
MW-51
EW-84
ND
980
EW-87
39
EW-85
400
EW-86
42
MW-59
ND
MW-105
ND
DRAINAGE CHANNEL
AREA C
MAGPIE CREEK
MW-130
2.7
EW-144
310
MW-220
ND
EW-137
490
MW-136
230
EW-141
230
EW-140
140
MAGPIE CREEK
MAGPIE CREEK
AREA A
MW-134
2.9
MW-122
ND
AREA B
MW-132
82
MW-63
55
MW-64
ND
BELL
DOWNAR
WINTERS
PINELL
BARBARA
ASTORIA
MORGAN
TATE
NORTH
ARCADE CREEK

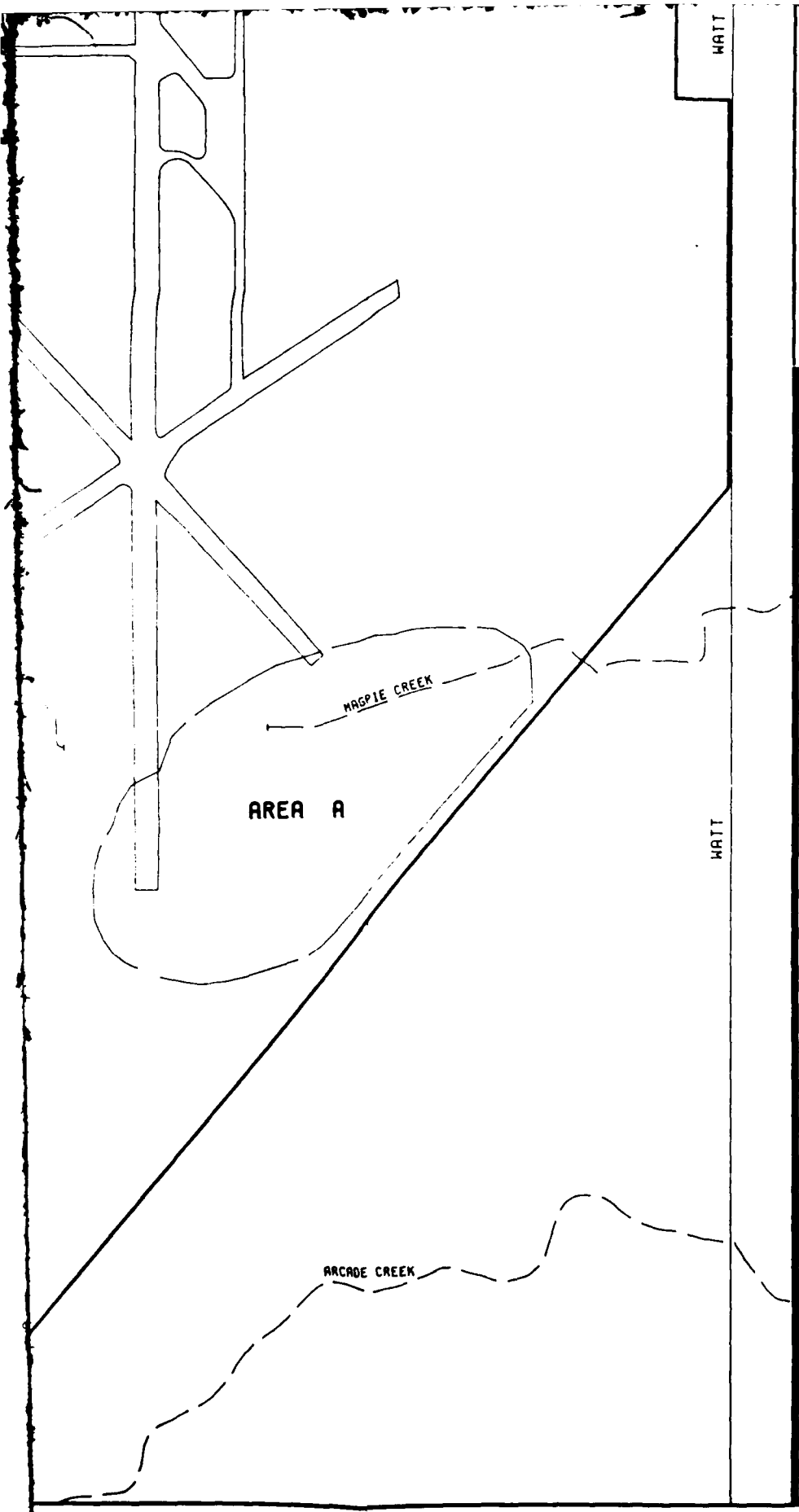


PLATE 9.
TCE CONCENTRATIONS IN THE DEEP "A", DEEP "B", AND EXTRACTION WELLS

McCLELLAN AFB
January - March 1989
Data Summary Report

LEGEND:

———	McCLELLAN AFB BOUNDARY
AREA	BOUNDARIES OF PAST DISPOSAL/ STORAGE SITES
~ ~ ~	STREAMS
●	MONITORING WELL
1000.00	TCE CONCENTRATION (ug/L)
ND	TCE NOT DETECTED

N

0 500 1000
SCALE IN FEET

GENERATED BY: Vivian M. Gaddie DATE: 4-17-89
PEER REVIEW: Deena A Stanley DATE: 4-17-89
PROJECT REVIEW: Diane J McCrank DATE: 4-17-89

RADIAN CORPORATION